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MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

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MIND

A QUARTERLY REVIEW

OF

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EDITED BY

GEORGE CROOM ROBERTSON,

PROFESSOR IN UNIVERSITY COLLEGE, LONDON.

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CONTENTS OF VOL. XVI.

ARTICLES.

	PAGE
Bain, A.—On Physiological Expression in Psychology	1
Caldwell, W.—Schopenhauer's Criticism of Kant	355
Donovan, J.—The Festal Origin of Human Speech	498
Hobhouse, L. T.—The Principle of Induction	80
„ Induction and Deduction	507
Hodgson, S. H.—Free-Will: an Analysis	161
Hyslop, J. H.—Helmholtz's Theory of Space-Perception	54
Land, J. P. N.—Arnold Geulincx and his Works	223
Lendenfeld, R. v.—The Undying Germ-Plasm and the Immortal Soul	92
Marshall, H. R.—The Physical Basis of Pleasure and Pain	327, 470
Scripture, E. W.—The Problem of Psychology	305
Shand, A. F.—The Nature of Consciousness	206
Stout, G. F.—Apperception and the Movement of Attention	23
„ Thought and Language	181
„ Belief	449

DISCUSSION.

Bain, A.—Notes on Volition	253
Baldwin, J. M.—The Coefficient of External Reality	389
Cattell, J. McK.—On the Origin of Music	386
Eastwood, A.—On Thought-Relations	243
Mackenzie, J. S.—On Psychology and Metaphysic	259
Spencer, H.—On the Origin of Music	535
Titchener, E. B.—Dr. Münsterberg and Experimental Psychology	521
Wallaschek, R.—On the Origin of Music	375

CRITICAL NOTICES.

Alexander, S.—J. S. Mackenzie, *An Introduction to Social Philosophy*	114
Caird, E.—O. Pfleiderer, *Development of Theology in Germany*	405
Editor.—J. Pikler, *The Psychology of the Belief in Objective Existence*	100
Mackenzie, W. L.—D. Ferrier, *The Croonian Lectures on Cerebral Localisation*	104
Read, C.—W. S. Jevons, *Pure Logic and other Minor Works*	106
„ J. N. Keynes, *Scope and Method of Political Economy*	408
Romanes, G. J.—C. Ll. Morgan, *Animal Life and Intelligence*	262

PAGE

SETH, J.—A. Fouillée, *L'Evolutionnisme des Idées-Forces* 119
,, G. T. Ladd, *Introduction to Philosophy* 271
SORLEY, W. R.—A. Marshall, *Principles of Economics*, i. 110
STOUT, G. F.—A. Lehmann, *Die Hypnose und die damit verwandten normalen Zustände* 412
SULLY, J.—C. Stumpf, *Tonpsychologie*, ii. 274
,, W. James, *The Principles of Psychology* 393
WHITTAKER, T.—E. Koenig, *Die Entwickelung des Causalproblems* . . 126
,, J. Croll, *The Philosophical Basis of Evolution* . . 268

NEW BOOKS.

Adam, Ch.—*Philosophie de François Bacon* 145
Alexander, A.—*A Theory of Conduct* 144
Baldwin, J. M.—*Handbook of Psychology*, i. (2nd ed.) 139
Ball, W. P.—*Are the Effects of Use and Disuse inherited?* 139
Bergemann, P.—*Ernst Platner als Moralphilosoph und sein Verhältniss zur Kant'schen Ethik* 550
Boedder, B.—*Natural Theology* 544
Bonjean, A.—*L'Hypnotisme, &c.* 145
Brewster, H. B.—*The Prison* 287
Calleja, C.—*Theory of Physics* 143
Campbell, H.—*Differences in the Nervous Organisation of Man and Woman* 542
Cappie, J.—*The Intra-Cranial Circulation* 422
Carneri, B.—*Der moderne Mensch* 433
Carus, P.—*The Ethical Problem* 144
Cathrein, V.—*Moralphilosophie* 148, 548
Chaboseau, A.—*Essai sur la Philosophie Bouddhique* 429
Chaignet, A. E.—*Histoire de la Psychologie des Grecs*, ii., iii. . . . 429
Chapman, C.—*Pre-Organic Evolution and the Biblical Idea of God* . . 423
Chiappelli, A.—*Melisso di Samo* 147
Compayré, G.—*The Elements of Psychology* (tr. W. H. Payne) . . . 290
Conta, B.—*Les Fondements de la Métaphysique* (tr. D. Tescanu) . . 146
Cros, A.—*Le Problème* 146
Dewey, J.—*Outlines of a Critical Theory of Ethics* 424
Donovan, J.—*From Lyre to Muse* 281
Du Bois-Reymond, P.—*Ueber die Grundlagen der Erkenntnis in den exacten Wissenschaften* 432
Ellis, A. B.—*The Ewe-speaking Peoples of the Slave Coast, &c.* . . . 142
Fischer, E. L.—*Theorie der Gesichtswahrnehmung* 549
Fonsegrive, G. L.—*Eléments de Philosophie.* i. *Psychologie* 293
Fouillée, A.—*L'Enseignement au point de vue national* 291
Frontera, G.—*Etude sur les Arguments de Zénon d'Elée contre Le Mouvement* 545
Ganser, A.—*Die Freiheit des Willens, &c.* 434
Geulincx, A.—*Opera Philosophica*, i. (ed. J. P. N. Land) 552
Grimm, E.—*Zur Geschichte des Erkenntnissproblems* 149
Grosse, E.—*Herbert Spencer's Lehre von dem Unerkennbaren* 149
Gruber, H.—*Der Positivismus vom Tode August Comte's bis auf unsere Tage* 547
Gurney, E., F. W. H. Myers, F. Podmore.—*Les Hallucinations télépathiques* (tr. L. Marillier). 545
Harris, W. T.—*Introduction to the Study of Philosophy* 289
,, *Hegel's Logic* 424
Hatch, E.—*The Influence of Greek Ideas and Usages upon the Christian Church* (ed. A. M. Fairbairn) 286

PAGE

Höffding, H.—*Outlines of Psychology* (tr. M. E. Lowndes) . . . 285
Hughes, H.—*Natural and Supernatural Morals* 420
James, W.—*The Principles of Psychology* 138
Jastrow, J.—*The Time-relations of Mental Phenomena* 545
Jones, H.—*Browning as a Philosophical and Religious Teacher* . . 418
Jordan, F.—*Body, Parentage, and Character in History* 421
Kant.—*Principles of Politics, including his Essay on Perpetual Peace* (tr. W. Hastie) 545
„ *Premiers Principes Métaphysiques de la Science de la Nature* (tr. Ch. Andler, Ed. Chavannes) 547
Keynes, J. N.—*The Scope and Method of Political Economy* . . . 286
Ladd, G. T.—*Outlines of Physiological Psychology* 284
Land, J. P. N.—*Inleiding tot de Wijsbegeerte* 435
Lehmann, A.—*Die Hypnose, &c.* 295
Leibniz.—*Philosophical Works of* (tr. G. M. Duncan) 291
Lindner, G. A.—*Manual of Empirical Psychology* (tr. C. De Garmo) . 289
Lioy, D.—*Philosophy of Right* (tr. W. Hastie) 421
McCosh, J.—*The Prevailing Types of Philosophy* 286
McMurry, F.—*Herbert Spencer's Erziehungslehre* 149
Martineau, J.—*Essays, Reviews, and Addresses* 285, 544
Maus, I.—*De la Justice pénale* 427
Morgan, C. Ll.—*Animal Life and Intelligence* 140
Morselli, E.—*Fisiopsicologia della Suggestione* 146
Müller, F. M.—*Physical Religion* 283
Münsterberg, H.—*Ueber Aufgaben u. Methoden der Psychologie* . . 551
Natge, H.—*Über Francis Bacons Formenlehre* 550
Nisbet, J. F.—*The Insanity of Genius and the General Inequality of Human Faculty* 540
Paszkowski, W.—*Die Bedeutung der theologischen Vorstellungen für die Ethik* 549
Paulhan, F.—*Le nouveau Mysticisme* 547
Pfleiderer, O.—*The Development of Theology in Germany, &c.* (tr. J. F. Smith) 141
Picavet, F.—*Les Idéologues* 425
Pillon, F.—*L'Année philosophique* (i.) 425
Rauh, F.—*Essai sur le Fondement métaphysique de la Morale* . . . 429
Reed, E. A.—*Hindu Literature* 289
Renan, E.—*The Future of Science* (tr.) 287
Ricardou, A.—*De l'Idéal* 292
Roberty, E. de—*La Philosophie du Siècle* 546
Rubinstein, S.—*Zur Natur der Bewegungen* 297
Salter W. M.—*Ethical Religion* 145
Schmid, Al.—*Erkenntnisslehre* 147
Schopenhauer, A.—*Studies in Pessimism* (tr. T. B. Saunders) . . 141
„ *The Art of Literature* (tr. T. B. Saunders) . . 420
„ *Werke* (ed. M. Brasch) 434
Schurman, J. G.—*Belief in God* 143
Scott, W. R.—*Introduction to Cudworth's Treatise concerning Eternal and Immutable Morality* 543
Sergi, G.—*Psicologia per le Scuole* 147
Serguéyeff, S.—*Le Sommeil et le Système nerveux* 292
Seth, J.—*Freedom as Ethical Postulate* 543
Shoup, F. A.—*Mechanism and Personality* 425
Sollier, P.—*Psychologie de l'Idiot et de l'Imbécile* 427
Spencer, H.—*Essays* (Library Edition) 418
„ *Justice* 543
Stein, L.—*Leibniz u. Spinoza* 298
Sterrett, J. M.—*Reason and Authority in Religion* 290
Stirling, J. H.—*Philosophy and Theology* 137
Strasosky, H.—*J. F. Fries als Kritiker der Kantischen Erkenntnistheorie* . 550

PAGE

Strong, H. A., Logeman, W. S., and Wheeler, B. I.—*Introduction to the Study of the History of Language* 283
Syme, D.—*On the Modification of Organisms* 288
Van der Wijck, B. H. C. K.—*Nog Eens: Oorsprong en Grenzen der Kennis* 551
Vogt, J. G.—*Das Wesen der Elektrizität und des Magnetismus, &c.* . . . 435
Vorbrodt, G.—*Principien der Ethik und Religionsphilosophie Lotze's* . 551
Wallace, W.—*Life of Arthur Schopenhauer* 141
Weber, Th.—*Metaphysik*, ii. 297
Westermarck, E.—*The History of Human Marriage* 542
Wetz, W.—*Shakespeare vom Standpunkte der vergleichenden Litteraturgeschichte*, i. 296
Windelband, W.—*Geschichte der Philosophie*, ii., iii. 295, 550
Ziehen, Th.—*Leitfaden der Physiologischen Psychologie* 294
Proceedings of the Aristotelian Society, vol. i. no. 3 (pt. 2), no. 4 (pt. 1) 140, 419
Riddles of the Sphinx 420, 538

NOTES.

EDITOR.—Prof. L. Stein on Leibniz and Spinoza 443
M'COSH, J.—The Office of Induction in Fundamental Philosophy . 159
Report of the International Congress of Physiological Psychology . 157

FOREIGN PERIODICALS 151, 299, 438, 554

MISCELLANEOUS 159, 304, 448, 556

EDITOR.—Valedictory 557

INDEX

TO

MIND, VOLS. I.—XVI. (1876-91).

N.B.—Names in Capitals are of CONTRIBUTORS; after which (*a*) stands for Main Articles, including (from Vol. ix.) Researches, and (*b*) for Minor Contributions of any kind, except Critical Notices (*c*).

A

ABBOT, F. E. (*a*) Scientific Philosophy, vii. 461.

Abbot, F. E., *Scientific Theism*, xi. 287, (J. SETH) 409; *The Way out of Agnosticism*, xv. 422.

Abbott, E. A., *Francis Bacon*, x. 460.

ABBOTT, T. K. (*b*) On Reduction to the Impossible and Propositions affirming Identity, ix. 163.

Abbott, T. K., *Kant's Critique of Practical Reason, &c.*, v. 149; *The Elements of Logic*, (W. H. S. MONCK, with Reply) viii. 603, ix. 163; *Kant's Introduction to Logic, &c.*, xi. 121.

Abel, C., *Linguistic Essays*, (H. M. BAYNES) viii. 291.

Abelardius, *La Religione come Scienza*, xi. 443.

ABRAHAMS, I. (*b*) Aristotle in Jewish Philosophy, xiii. 468. (*c*) See M. Friedländer.

Absolutism and Empiricism, (W. JAMES) ix. 281.

Acharya, M., *Systems of Hindu Philosophy* (tr.), vii. 451.

'Achilles and Tortoise,' The, (S. H. HODGSON) v. 386.

Adam, C., *Philos. de F. Bacon*, xvi. 145.

ADAMSON, R. (*a*) Schopenhauer's Philosophy, i. 491; Riehl on "Philosophical Criticism," xiv. 66. (*b*) W. S. Jevons on Mill's Experimental Methods, iii. 415; H. Sidgwick on the Critical Philosophy, viii. 251; Kant's View of Mathematical Premisses and Reasoning, 424. (*c*) See H. Czolbe, W. Fleming, E. Simcox, *Thoughts on Logic*, E. Schrödcr, J. Huber, T. M. Herbert, J. Volkelt, F. Ryland, W. H. S. Monck, W. S. Jevons, J. Watson, M. Müller, E. Caird, F. H. Bradley, J. Sully, H. Lotze, J. C. Murray.

Adamson, R., *On the Philosophy of Kant*, iv. 602, (E. CAIRD) v. 124; *Fichte*, (A. SETH) vi. 583.

Adickes, E., *Kant's Systematik als systembildender Factor*, xiii. 141.

Æsthetic Evolution in Man, (G. ALLEN) v. 445.

Agnostic Faith, xiv. 452.

Alaux, J. E., *Esquisse d'une Philosophie de l'Être*, xiii. 615; *Le Problème religieux au XIXe Siècle*, xv. 424.

Alexander, A., *Some Problems of Philosophy*, xii. 469; *A Theory of Conduct*, xvi. 144.

Alexander, P. P., *Moral Causation*, (A. BAIN) i. 393; Death of, xii. 158.

ALEXANDER, S. (*a*) Hegel's Conception of Nature, xi. 495. (*c*) See O. Pfleiderer, J. Royce, H. Steinthal, St. G. Mivart, W. C. Coupland, J. S. Mackenzie.

Alexander, S., *Moral Order and Progress*, xiv. 315, (A. SETH) 554.

ALLEN, G. (*a*) Note-Deafness, iii. 157; The Origin of the Sublime, 324; The Origin of the Sense of Symmetry, iv. 301; Pain and Death, v. 201; Æsthetic Evolution in Man, 445; Sight and Smell in Vertebrates, vi.

453; Idiosyncrasy, viii. 487. (*b*) J. Sully on *Physiological Æsthetics*, ii. 574; Development of the Colour-Sense, iii. 129; G. S. Hall on the Perception of Colour, iv. 267; Colour-Sense in the Burmese, 299. (*c*) See J. J. Murphy, J. B. Crozier, L. Geiger, T. Ribot, M. Guthrie, L. F. Ward, M. Guyau.

Allen, G., *Physiological Æsthetics*, (J. Sully) ii. 387; *The Colour-Sense, its Origin and Development*, iv. 144, (J. Sully) 415; *Chs. Darwin*, xi. 122.

Alternative, The: a Study in Psychology, (J. B. Gibson) viii. 109, (French tr.), xi. 441.

Althaus, J., *Diseases of the Nervous System*, iii. 149.

Amberley, Lord, The Metaphysics of, (J. S. Henderson) ii. 55.

American Journal of Psychology, xii. 486, xiii. 149.

Amnesia, A remarkable case of, (Editor) xii. 636.

Angiulli, A., *La Filosofia e la Scuola*, xiii. 459.

Animal Intelligence, On the Study of, (C. Ll. Morgan) xi. 174.

Antal, G. v., *Die holländische Philosophie im 19ten Jahrh.*, xiii. 621.

Anthropology, A new Method in, (T. Whittaker) xiv. 310.

Antinomy of Thought, The, (A. F. Shand) xv. 357.

Ants, Sir J. Lubbock on the Habits of, ii. 251.

Apperception, Dr. H. Münsterberg on, (Editor) xv. 234; And the Movement of Attention, (G. F. Stout) xvi. 23.

A priori Knowledge, Is there an? (J. Solomon) xv. 260.

Archer-Hind, R. D., *The Timæus of Plato*, xiii. 449, (R. Nettleship) xiv. 127. See also Ritchie, D. G., on Plato's *Phaedo*, xi. 353.

Archiv für Gesch. der Philosophie, xii. 487, xiii. 149.

Ardigò, R., *Opere filosofiche*, (I.-III.) xi. 291, (IV.) xii. 626.

Argyll, Duke of, *The Unity of Nature*, ix. 315.

Aristotelian Society, The, vi. 151, 603, viii. 622, ix. 166, and at the end of each following No.; *Proceedings of the*, xiii. 631, xiv. 157, xv. 131, 420, xvi. 140, 419.

Aristotle, Notes on his Psychology in relation to Modern Thought, (J. M. Rigg) xi. 85; in Jewish Philosophy, (I. Abrahams) xiii. 468.

Arithmetic, The Foundation of, (H. Wedgwood) iii. 572.

Arnold, M., On Descartes' 'Cogito ergo sum,' (S. H. Hodgson) i. 568; On Butler's doctrine of Self-Love, (F. Y. Edgeworth) 570.

Arnoldt, E., *Kant's Prolegomena nicht doppelt redigirt*, iv. 448.

Arréat, L., *La Morale dans le Drame, l'Epopée et le Roman*, ix. 610; *Journal d'un Philosophe*, xii. 623.

Art and Psychology, (J. Sully) i. 467.

Asher, D., *A. Schopenhauer, Neues von ihm u. über ihn*, ii. 282; *Das Endergebniss der Schopenhauer'schen Philosophie*, x. 313.

Association of Ideas, Experiments on the, (J. M. Cattell) xii. 68, (J. M. Cattell, S. Bryant) xiv. 230.

'Association'-Controversies, On (A. Bain) xii. 161.

Association and Thought, (F. H. Bradley) xii. 354.

Associationism and the Origin of Moral Ideas, (R. Flint) i. 321.

Asymmetry of Function, Bilateral, (G. S. Hall, E. M. Hartwell) ix. 93.

Attention, W. B. Carpenter's Theory of, (J. T. Lingard) ii. 272; Is there any special Activity of? (F. H. Bradley) xi. 305; On a feature of Active, (F. H. Bradley) xii. 314.

Aubry, P., *La Contagion du Meurtre*, xiii. 450.

Authority tested by Experience, The Value of, (F. Y. Edgeworth) xiii. 146.

Automata, Are we? (W. James) iv. 1.

Automatic Theory of Animal Activity, The, (A. Main) i. 431.

Automatism in Epileptics, J. Hughlings Jackson on, i. 272.

Autopsy, Society of Mutual, ii. 138.

Avarice, The Associationist Theory of, (J. Sully) i. 567.

Avenarius, R., *Philosophie als Denken der Welt*, i. 298; *Kritik der reinen Erfahrung* (I.), xiii. 617.

Azarias, Brother, *Aristotle and the Christian Church*, xiii. 447.

B

Baerenbach, F. v., *Naturgeschichte des Weibes*, iii. 152; *Prolegomena zu einer anthropologischen Philosophie*, iv. 141.

Baeumker, C., *Das Problem der Materie in der Griech. Phil.*, xv. 294, (A. W. Benn) 411.

Bahnsen, J., *Der Widerspruch im Wissen u. Wesen der Welt* (I.), vi. 151.
Baildon, H. B., *The Spirit of Nature*, v. 439.
Bain, A. (*a*) Life of James Mill, i. 97, 509, ii. 519; H. Sidgwick's *Methods of Ethics*, i. 179; Education as a Science, ii. 1, 294, iii. 304, 451; John Stuart Mill, iv. 211, 375, 520, v. 82; On some points in Ethics, viii. 48; Mr. James Ward's "Psychology," xi. 457; On 'Association'-Controversies, xii. 161; Definition and Demarcation of the Subject-sciences, xiii. 527; The Empiricist Position, xiv. 369; On Physiological Expression in Psychology, xvi. 1. (*b*) G. H. Lewes on the Postulates of Experience, i. 146; The Gratification derived from the Infliction of Pain, 429; Existence and Descartes' 'Cogito,' ii. 259; Mill's Theory of the Syllogism, iii. 137; W. G. Ward on Free-will, v. 116; F. Galton's Statistics of Mental Imagery, 564; H. Spencer's Psychological "Congruities," vi. 266, 394; Mind and Body, viii. 402; Is there such a thing as Pure Malevolence? 562; On Mr. Ward's "Psychological Principles (III.)," xii. 311; On Feeling as Indifference, 576, xiv. 97; Notes on Volition, xvi. 253. (*c*) See H. Spencer, G. Grote, P. P. Alexander, J. Sully, R. M. Bucke.
Bain, A., *The Emotions and the Will* (3rd ed.), i. 154; *Education as a Science*, iv. 136; On Free-will, (W. G. Ward) v. 264; *James Mill* and *John Stuart Mill*, vii. 310; *Practical Essays*, ix. 467; *English Composition and Rhetoric*, xii. 298, xiii. 608; *On Teaching English*, xii. 298; F. Koerber on his Doctrine of Mental Reproduction, 485.
Baldwin, J. M. (*b*) Dr. Maudsley on the Double Brain, xiv. 545; The Coefficient of External Reality, xvi. 389.
Baldwin, J. M., *Handbook of Psychology*, xv. 138, (2nd ed.) xvi. 139.
Balfour, A. J. (*a*) The Philosophy of Ethics, iii. 67; Transcendentalism, 480; Green's Metaphysics of Knowledge, ix. 73. (*b*) The Philosophy of Ethics, iii. 276; Reply to E. Caird on Transcendentalism, iv. 114; J. Watson on Transcendentalism, vi. 260.
Balfour, A. J., *A Defence of Philosophic Doubt*, (F. W. Maitland) iv. 576; On Transcendentalism, (E. Caird, with Reply) 111, 114.
Ball, W. P., *Are the Effects of Use and Disuse inherited?* xvi. 139.
Ballet, G., *Le Langage intérieur et les diverses Formes de l'Aphasie*, xi. 441.
Baltzer, A., *Spinoza's Entwicklungsgang, &c.*, xiv. 303.
Barach, C. S., *Excerpta e Libro Alfredi Anglici De Motu Cordis*, iv. 141.
Barchudarian, J., *Inwiefern ist Leibniz, &c.*, xv. 146.
Barlow, J. W., *The Ultimatum of Pessimism*, viii. 134.
Barratt, A. (*a*) The 'Suppression' of Egoism, ii. 167; Ethics and Politics, 453. (*b*) Ethics and Psychogony, iii. 277.
Barratt, A., On 'The Suppression of Egoism,' (H. Sidgwick) ii. 411; Death of, vi. 448; *Physical Metempiric*, (C. Read) viii. 268.
Barrett, T. S., *Introduction to Logic and Metaphysics*, i. 294.
Barth, A., *The Religions of India*, vii. 148.
Barth, P., *Die Geschichtsphilosophie Hegel's, &c.*, xv. 578.
Barzellotti, G. (*a*) Philosophy in Italy, iii. 505.
Barzellotti, G., *The Ethics of Positivism* (tr.), iv. 139; *David Lazzaretti*, x. 169.
Bascom, J., *Comparative Psychology*, iii. 581.
Bastian, A., *Die Vorgeschichte der Ethnologie* and *Der Völkergedanke*, vii. 156; *Zur naturwiss. Behandlungsweise der Psychologie, &c.*, ix. 160; *Grundzüge der Ethnologie*, 614; *Der Papua des dunkeln Inselreichs*, x. 626; *Die Seele indischer u. hellenischer Philosophie in den Gespenstern moderner Geisterseherei*, xi. 446; *In Sachen des Spiritismus, &c.*, xii. 308; *Die Welt in ihren Spiegelungen, &c.*, and *Ethnologisches Bilderbuch*, xiii. 306; *Allerlei aus Volks- u. Menschenkunde*, 619.
Bastian, H. C., *The Brain as an Organ of Mind*, v. 434, (Editor) vi. 120.
Bateman, F., *Darwinism tested by Language*, iii. 579.
Baur, F., *Philological Introduction to Greek and Latin*, ii. 130.
Bax, E. B., *A Handbook of the History of Philosophy*, xi. 433.
Baynes, H. M. (*c*) See M. Lazarus, C. Abel, H. Steinthal.
Baynes, T. S., Death of, xii. 486.

Beard, C., *The Reformation of the 16th Century*, viii. 619.
Beard, G. M., On Trance, ii. 568; On Experiments with Human Beings, iv. 413; *American Nervousness*, vi. 596; Death of, viii. 462.
Beaunis, H., *Études sur le Somnambulisme provoqué*, xi. 288; *Les Sensations internes*, xiv. 597.
Beaussire, E., *Les Principes de la Morale*, xi. 129, (H. Rashdall) 272; *Les Principes du Droit*, xiii. 615; Death of, xiv. 471.
Beauty, Relations of Reason to, (E. Gurney) iv. 482.
Beck, J. T., *Biblical Psychology*, ii. 431.
Begg, W. P., *The Development of Taste*, xii. 136.
Belief, Knowledge and, (D. G. Thompson) ii. 309; The Psychology of, (W. James) xiv. 321; (G. F. Stout) xvi. 449.
Bénard, C., *La Philosophie ancienne*, x. 473; *L'Esthétique d'Aristote, &c.*, xv. 426.
Bender, H., *Zur Lösung des metaph. Problems*, xi. 592.
Benecke, E. (*b*) On Definitions, vi. 530.
Beneke, Herbart, the English Psychologists, and, (G. F. Stout) xiv. 1.
Benn, A. W. (*a*) Another View of H. Spencer's Ethics, v. 489; Buckle and the Economics of Knowledge, vi. 231; The Relation of Greek Philosophy to Modern Thought, vii. 65, 231. (*b*) Habit and Progress, xi. 243. (*c*) See W. L. Newman, C. Baeumker.
Benn, A. W., *The Greek Philosophers*, viii. 306, (E. Wallace) 426.
Bentham, J., *Principles of Morals and Legislation*, ii. 131.
Berg, H., *Die Lust an der Musik*, iv. 449.
Bergemann, P., *Ernst Platner, &c.*, xvi. 550.
Berger, A. Freiherr v., *Raumanschauung u. Formale Logik*, xi. 446.
Bergmann, J., *Reine Logik* (I.), (A. Sidgwick) v. 139; *Sein und Erkennen*, vi. 298; *Die Grundprobleme der Logik*, viii. 309; *Ueber das Richtige*, ix. 161; *Vorlesungen über Metaphysik mit besonderer Beziehung auf Kant*, xi. 443; *Ueber das Schöne*, xii. 629.
Bergson, H., *Sur les Données immédiates de la Conscience*, xv. 292.
Berkeley as a Moral Philosopher, (H. W. Orange) xv. 514.
Bernard, J., *Kant's Critical Philosophy, &c.*, xiv. 594.
Bernardus Silvester, *De Mundi Universitate*, ii. 135.
Bernstein, J., *Five Senses* (tr.), i. 435.
Berthelot, M., *Science et Philosophie*, xi. 441.
Bertrand, A., *L'Apperception du Corps humain*, vi. 444; *La Psychologie de l'Effort, &c.*, xv. 140.
Best, G. P., *Morality and Utility*, xii. 617.
Bevington, L. S. (*a*) The Personal Aspect of Responsibility, iv. 244; Determinism and Duty, v. 30.
Biedermann, G., *Philosophie der Geschichte*, x. 625.
Bigg, C., *The Christian Platonists of Alexandria*, xii. 301.
Bilateral Asymmetry of Function, (G. S. Hall, E. M. Hartwell) ix. 93.
Bilharz, A., *Erläuterungen zu Kant's K. d. r. V.*, ix. 319.
Binet, A. (*a*) La Rectification des Illusions par l'Appel aux Sens, ix. 206; Double Consciousness in Health, xv. 46. (*b*) Visual Hallucinations in Hypnotism, ix. 413; Vertigo of Direction, x. 156; Attention in Perception, xi. 599.
Binet, A., *La Psychologie du Raisonnement*, xi. 289, (J. Jacobs) 414; (et C. Féré) *Le Magnétisme Animal*, xii. 144; *Études de Psychologie expérimentale*, xiii. 617; *The Psychic Life of Micro-organisms* (tr. T. M'Cormack), xiv. 454.
Binocular Colour Mixture, W. v. Bezold on, i. 270; Dobrowolsky on, 270.
Binocular Vision, On some facts of, (J. Venn) xiv. 251, (J. H. Hyslop) 393.
Biran, Maine de, *Science et Psychologie* (ed. A. Bertrand), xii. 625.
Bishop, J. Le M. (*b*) Brute Reason, v. 402, 575.
Bithell, R., *The Creed of a Modern Agnostic*, viii. 456; *Agnostic Problems*, xii. 616.
Blackwell, A. B., *Physical Basis of Immortality*, i. 574.
Bleuler, E., und K. Lehmann, *Zwangsmässige Lichtempfindungen*, vi. 297.
Blunt, H. W. (*c*) See F. Tönnies.
Boedder, B., *Natural Theology*, xvi. 544.
Bolliger, A., *Anti-Kant* (I.), vii. 608, (T. Whittaker) viii. 446.
Bölsche, W., *Die naturwiss. Grundlagen der Poesie*, xii. 478.
Bonar, J., *Malthus, &c.*, x. 610.
Bonatelli, F., *Discussioni gnoseologiche, &c.*, xii. 305.
Bonitz, H., Death of, xiii. 631.
Bonjean, A., *L'Hypnotisme*, xvi. 145.

Boole's Logical System, (J. Venn) i. 479; W. S. Jevons's Criticism of, (G. B. Halstead) iii. 134.
Bordier, A., *La Vie des Sociétés*, xii. 626.
Bosanquet, B. (*a*) The Philosophical Importance of a true Theory of Identity, xiii. 356. (*b*) A Misquotation of Hegel by G. H. Lewes, vii. 157; Our Right to regard Evil as a Mystery, viii. 419; F. H. Bradley on Fact and Inference, x. 256; A. Binet on Vertigo of Direction, 317; 'Falsehood' and 'Ignorance' in Plato, xi. 300; Comparison—in Psychology and in Logic, 405; Hegel's Correspondence, xiii. 144.
Bosanquet, B., *Knowledge and Reality*, x. 466, (J. Seth) xi. 94; *Introduction to Hegel's Philosophy of Fine Art*, xii. 134, (D. G. Ritchie) 597; *Logic; or the Morphology of Knowledge*, xiii. 445, (W. E. Johnson) xiv. 120; *Essays and Addresses*, 452.
Botanical Classification, (W. L. Davidson) v. 513.
Bouillier, F., *De la Conscience* and *Du Plaisir et de la Douleur*, (A. Main) iii. 255; *Études familières de Psychologie et de Morale*, x. 306; *Nouvelles Études*, &c., xii. 473.
Bourdeau, L., *Théorie des Sciences*, vii. 451.
Bourne, H. R. F., *Life of John Locke*, i. 438.
Bowen, F., *Modern Philosophy from Descartes to Schopenhauer and Hartmann*, (C. Read) iii. 118.
Bower, G. S., *Hartley and James Mill*, vi. 440.
Bowne, B. P., *Metaphysics*, vii. 312, (C. Read) viii. 119.
Bradley, F. H. (*a*) Is there any special Activity of Attention? xi. 305; Association and Thought, xii. 354; On Pleasure, Pain, Desire and Volition, xiii. 1; Reality and Thought, 370. (*b*) H. Sidgwick on *Ethical Studies*, ii. 122; Is Self-sacrifice an Enigma? viii. 258; Is there such a thing as Pure Malevolence? 415; Sympathy and Interest, 573; Can a man sin against Knowledge? ix. 286; On the analysis of Comparison, xi. 83; On a feature of Active Attention, xii. 314; Why do we remember forwards and not backwards? 579.
Bradley, F. H., *Ethical Studies*, (H. Sidgwick) i. 545; *Mr. Sidgwick's Hedonism*, ii. 275; *The Principles of Logic*, viii. 454, (R. Adamson) ix. 122; On Fact and Inference, (B. Bosanquet) x. 256; His Analysis of Mind, (J. Ward) xii. 564.
Brain, Journal of the Neurological Society, xii. 486.
Brain, The double, (H. Maudsley) xiv. 161; Dr. Maudsley on, (J. M. Baldwin) 545.
Brain - functions, Localisation of, (Editor) vii. 299; cp. Cerebrum.
Brasch, M., *Welt- u. Lebensanschauung F. Ueberweg's*, &c., xiv. 302.
Bray, C., *Psychological and Ethical Definitions*, iv. 599; *The Science of Man* (2nd ed.), viii. 455; *Phases of Opinion and Experience*, x. 300; *The Philosophy of Necessity* (3rd ed.), xiv. 596.
Brentano, F., *Psychologie vom empirischen Standpunkte* (I.), (R. Flint) i. 116; Logical Innovations of, (J. P. N. Land) 289; *Vom Ursprung der sittlichen Erkenntniss*, xiv. 604.
Brewster, H. B., *The Theories of Anarchy and of Law*, xii. 467; *The Prison*, xvi. 287.
Brochard, V., *Les Sceptiques Grecs*, xiii. 134.
Bruchmann, K., *Psychologische Studien zur Sprachgeschichte*, xiv. 152.
Brunel, L., *Les Philosophes et l'Académie Française au 18e Siècle*, x. 144.
Bruno, Giordano, (T. Whittaker) ix. 236; *The Heroic Enthusiasts* (*Gli Eroici Furori*, tr.), xiii. 295.
Brute Reason, (J. Le M. Bishop) v. 402, 575.
Brütt, M., *Der Positivismus*, &c., xiv. 459.
Bryant, S. (*a*) On the Nature and Functions of a Complete Symbolic Language, xiii. 188; Mental Association investigated by Experiment, xiv. 230.
Bryant, S., *Educational Ends*, (J. Sully) xiii. 105.
Bryant, W. M., *Philosophy of Landscape Painting*, viii. 456; *The World-Energy and its Self-conservation*, xv. 422.
Buccola, G., *La Legge del Tempo nei Fenomeni del Pensiero*, viii. 460; Death of, x. 487.
Büchner, L., *Mind in Animals* (tr.), vi. 292.
Bucke, R. M., *Man's Moral Nature*, v. 151, (A. Bain) 559.
Buckle, And the Economics of Knowledge, (A. W. Benn) vi. 231; *The Miscellaneous and Posthumous Works of* (new ed.), xi. 122.

Burnouf, E., *La Vie et la Pensée*, xii. 302.
Burt, B. C., *A brief History of Greek Philosophy*, xiv. 292.
Butler's Ethical System, (W. H. S. Monck) iii. 358; Mr. W. L. Courtney on Bishop Butler, (H. Rashdall) xi. 555.
Butler, S., *Life and Habit*, iii. 149; *Evolution, Old and New*, iv. 440; *Unconscious Memory*, vi. 146; *Luck, or Cunning, as the main Means of Organic Modification*, xii. 294.
Byk, J. A., *Die vorsokratische Philosophie der Griechen* (II.), iii. 153; *Die Physiologie des Schönen*, iv. 143; *Rechtsphilosophie*, vi. 601.

C

Caird, E. (*a*) Green's Last Work, viii. 544. (*b*) A. J. Balfour on Transcendentalism, iv. 111; The so-called Idealism of Kant, 557; Kant's Refutation of Idealism, v. 115. (*c*) See R. Adamson, O. Pfleiderer.
Caird, E., *A Critical Account of the Philosophy of Kant*, ii. 430, (T. M. Lindsay) 476; *The Problem of Philosophy at the Present Time*, vii. 152; *Hegel*, viii. 307, (R. Adamson) 432; *The Social Philosophy and Religion of Comte*, x. 462; *The Critical Philosophy of Immanuel Kant*, xv. 130, (A. Seth) 266.
Caird, J., *An Introduction to the Philosophy of Religion*, v. 435, (W. Knight) 548; *Spinoza*, xiii. 290, (W. R. Sorley) 601; *Mind and Matter*, xiv. 145.
Cairnes, J. E., *The Character and Logical Method of Political Economy*, (Editor) i. 131.
Calderwood, H. (*a*) H. Sidgwick on Intuitionalism, i. 197; Another View of Green's Last Work, x. 73.
Calderwood, H., On Intuitionalism in Morals. (H. Sidgwick) i. 563; *The Relations of Mind and Brain*, iv. 445, (J. T. Lingard) v. 130, (2nd ed.) ix. 314; *Handbook of Moral Philosophy*, (14th ed.) xiv. 142.
Caldwell, W. (*a*) Schopenhauer's Criticism of Kant, xvi. 355.
Calleja, C., *Theory of Physics*, xvi. 143.
Cambridge, Philosophy at, (H. Sidgwick) i. 235.
Camerer, T., *Die Lehre Spinoza's*, (A. B. Lee) iii. 261.
Campbell, H., *Nervous Organisation of Man and Woman*, xvi. 542.
Candolle, A. de, *Histoire des Sciences et des Savants* (2me éd.), x. 308.
Cantoni, C., *G. Ferrari*, iii. 583; *E. Kant*, iv. 601, viii. 310, ix. 611.
Capes, W. W., *Stoicism*, vi. 145.
Cappie, J., *The Causation of Sleep* (2nd ed.), viii. 307; *The Intra-cranial Circulation, &c.*, xvi. 422.
Carneri, B., *Entwicklung u. Glückseligkeit*, xii. 147; *Der moderne Mensch*, xvi. 433.
Carnio, L., *Die Menschenseele*, xiv. 605.
Caro, E., *Philosophie et Philosophes*, xiv. 296.
Carpenter, W. B., Theory of Attention of, (J. T. Lingard) ii. 272; Death of, xi. 150; *Nature and Man*, xiv. 140.
Carrau, L., *La Conscience psychologique, &c.*, xiii. 300; *La Philosophie religieuse en Angleterre, &c.*, 300; Death of, xiv. 471.
Carrière, M., *Aesthetik* (3te Aufl.), x. 627, (T. Whittaker) xi. 109; *Die phil. Weltanschauung der Reformationszeit, &c.* (2te Aufl.), xii. 309, (T. Whittaker) 451.
Carroll, L., *The Game of Logic*, xii. 613.
Carus, P., *Fundamental Problems*, xv. 137; *The Ethical Problem*, xvi. 144.
Case, T. (*b*) The philosophic term Phenomenon, xiv. 309.
Case, T., *Physical Realism*, xiv. 139, (T. Whittaker) 267.
Castillon, *Sur un nouvel Algorithmique logique*, (J. Venn) vi. 447.
Cataract, Cases of Couching for, (W. H. S. Monck) vii. 107.
Cathrein, V., *Moralphilosophie*, xvi. 148, 548.
Cattell, J. M. (*a*) The Time it takes to see and name Objects, xi. 63; The Time taken up by Cerebral Operations, 220, 377, 524; Experiments on the Association of Ideas, xii. 68, xiv. 230; The Psychological Laboratory at Leipsic, xiii. 37; Mental Tests and Measurements, xv. 373. (*b*) On the Origin of Music, xvi. 386. (*c*) See G. T. Ladd, W. Wundt.
Causation, On, (S. H. Hodgson) iv. 500; And its Organic Conditions, (E. Montgomery) vii. 209, 381, 514.
Cazenove, J. G., *Historic Aspects of the A Priori Argument, &c.*, xi. 432.
Cell-Aggregates, Are we? (E. Montgomery) vii. 100.
Cellarier, F., *Etudes sur la Raison*, xiv. 294; *Rapports du Relatif et de l'Absolu*, xv. 423.

Cerebral Cortex, Sanders on Development of the, i. 271; A. Hollis on Localisation of Function in the, ii. 250; And its Work, (H. Maudsley) xv. 161.
Cerebral Operations, The Time taken up by, (J. M. Cattell) xi. 220, 377, 524.
Cerebrum, Functions of the, (Editor) ii. 108, 247, v. 254; see also vii. 299.
Ceretti, P., *Opere Postume*, x. 620.
Cesca, G., *L'Evoluzionismo di Erberto Spencer*, viii. 143; *Il nuovo Realismo in Germania ed Inghilterra*, 309; *Le Teorie della Localizzazione spaziale*, 460; *La Dottrina Kantiana dell 'A Priori* and *L'Origine del Principio di Causalità*, x. 309; *La Morale della Filosofia scientifica*, xi. 442; *La Teorica della Conoscenza nella Filosofia Greca*, xii. 628; *L'Educazione del Carattere*, xiii. 459; *La Metafisica, &c., del Leibniz*, xiv. 148; *La Religione della Filosofia scientifica*, 297.
Chaboseau, A., *Essai sur la Philosophie Bouddhique*, xvi. 429.
Chaignet, A. E., *Histoire de la Psychologie des Grecs*, (I.) xiii. 131, (II., III.) xvi. 429.
Champneys, F. H. (*b*) Notes on an Infant, vi. 104.
Chance, The Philosophy of, (F. Y. Edgeworth) ix. 223.
Chandler, H. W., Death of, xiv. 471.
Chapman, C., *Pre-organic Evolution, &c.*, xvi. 423.
Character, F. Galton on Study of Types of, ii. 573.
Chauvet, E., *La Philosophie des Médecins grecs*, xi. 290.
Chiappelli, A., *Della Interpretazione Panteistica di Platone*, vii. 154; *Melisso di Samo*, xvi. 147.
Children, H. Taine on the Acquisition of Language by, ii. 252; Mental Development in, (J. Sully) v. 385; First Notions of the Unseen in, (E. M. Stevens) xi. 149.
Chloroform, Consciousness under, (H. Spencer) iii. 555.
Cimbali, G., *Nicola Spedalieri*, xiv. 602; *La Volontà umana, &c.*, xv. 142.
Clapperton, J. H., *Scientific Meliorism*, xi. 125.
Clarke, H. J., *The Fundamental Science*, x. 466.
Clarke, R. F., *Logic*, xiv. 290, (W. E. Johnson) 425.
Class, G., *Ideale u. Güter*, xi. 591.
Classification, of the Sciences, (H. M. Stanley) ix. 265; The Logic of, (W. L. Davidson) xii. 233.
Classified English Vocabulary, A, i. 5. 4.
Clay, E., *L'Alternative*, xi. 441.
Cleland, J., *Evolution, Expression and Sensation*, vii. 449.
Clevenger, S. V., *Comparative Physiology and Psychology*, x. 303.
Clifford, W. K. (*a*) On the Nature of Things-in-themselves, iii. 57.
Clifford, W. K., Death of, iv. 295; *Lectures and Essays*, 596; *Seeing and Thinking*, v. 148; *The Common Sense of the Exact Sciences*, x. 465.
Clodd, E., *Myths and Dreams*, x. 463; *The Story of Creation*, xiii. 286.
Cocker, B. F., *Psychology*, viii. 139.
'Cogito ergo sum,' (W. G. Davies) ii. 412; cp. i. 568, ii. 126, 259.
Cognition, On the Function of, (W. James) x. 27.
Cognition of Physical Reality, The Genesis of the, (G. F. Stout) xv. 22; (J. Pikler) 394; Dr. Pikler on, (G. F. Stout) 545.
Cohen, H., *Kant's Begründung der Ethik*, iii. 153; *Das Princip der Infinitesimal-Methode*, ix. 159; *Kant's Theorie der Erfahrung* (2te Aufl.), xi. 134; *Kant's Begründung der Aesthetik*, xiv. 460.
Coit, S. (*a*) The Final Aim of Moral Action, xi. 324.
Coit, S., *Die Ethische Bewegung in der Religion* (tr.), xv. 579.
Collective and Abstract Terms, The Original Intention of, (F. M. Müller) i. 345.
Collet, C. E. (*b*) Remarks on Mental Association, &c., xiv. 247.
Collier, J. (*c*) See A. Espinas, A. Fouillée.
Collins, F. H., *An Epitome of the Synthetic Philosophy*, xv. 130.
Collins, W. L., *Butler*, vi. 291.
Colours, Harmony of, (J. Sully) iv. 172.
Colour-blindness, Holmgren on, i. 409; Hochecker on, 411; Leber on, 411; Stilling on, iii. 262.
Colour-contrast, Prof. O. N. Rood on, xiv. 312.
Colour-sense, Development of the, (G. Allen) iii. 129, iv. 299.
Coloured Light, A. Ponza on Influence of, upon the Insane, i. 273.
Colsenet, E., *La Vie inconsciente de l'Esprit*, vi. 149.
Combe, G., *Education* (ed. W. Jolly), iv. 598.
Comparative Psychology of Man, The, (H. Spencer) i. 7.
Comparison, (J. Sully) x. 489; On the analysis of, (F. H. Bradley)

xi. 83; In Psychology and Logic, (B. Bosanquet) 405.
Compayré, G., *The Elements of Psychology* (tr.), xvi. 290.
Comte, A., *System of Positive Polity* (tr., I.-IV.), i. 294, 572, ii. 430; *The Eight Circulars* (tr.), vii. 604.
Conceivability and the Infinite, (G. S. Fullerton) xi. 186.
Conder, E. R., *The Basis of Faith*, iv. 297, vi. 542.
Conditional Propositions, (T. B. Scannell) vii. 442.
Condorcet, *How to Reckon certainly* (tr.), vii. 450.
Consciousness, Central Innervation and, (W. Wundt) i. 161; Azam on Double, 414, 553; Dufay on Double, 552; The Veracity of, (W. G. Davies) ii. 64; And Unconciousness, (G. H. Lewes) 156; Physical Law of, (A. Herzen) iv. 268; Definition of, (W. L. Davidson) vi. 406; Physical Conditions of, (H. Maudsley) xii. 489; The Unity of, (A. F. Shand) xiii. 231; Double, in Health, (A. Binet) xv. 46; The Nature of, (A. F. Shand) xvi. 206.
Consistency and Real Inference, (J. Venn) i. 43.
Conta, B., *Théorie du Fatalisme*, ii. 433; *Les Fondements de la Métaphysique*, xvi. 146.
Contraposition and Conversion, Logical, (C. S. Peirce, Editor) i. 424, 425.
Conway, M.D., *Demonology and Devil-Lore*, iv. 441.
Cope, E. D., *The Origin of the Fittest*, xii. 294.
Copner, J. (*b*) On the Motives and Impulses of the Mind, vii. 443.
Copner, J., *The Faith of a Realist*, xv. 420.
Cornelius, C. S., *Die Wechselwirkung zwischen Leib und Seele*, v. 440.
Cossa, L., *Guide to the Study of Political Economy* (tr.), vi. 148.
Coupland, W. C. (*c*) See E. v. Hartmann, W. Graham, G. H. Schneider, E. G. Robinson, J. Rickaby.
Coupland, W. C., *Elem. of Ment. and Mor. Science, &c.*, xiv. 291; *The Gain of Life*, (S. Alexander) xv. 563.
Courtney, W. L., *The Metaphysics of J. S. Mill*, iv. 289, (Editor) 421; *Studies in Philosophy, Ancient and Modern*, viii. 133; *Constructive Ethics*, xi. 435; On Bishop Butler, (H. Rashdall) 555; *Life of J. S. Mill*, xiv. 287.
Cousin, V., *Histoire générale de la Philosophie* (11me éd.), x. 144.
Cox, E. W., *Sleep and Dream*, iii. 289.
'Cram,' (W. S. Jevons) ii. 193.
Credaro, L., *Lo Scetticismo degli Accademici*, xv. 293.
Creighton, C., *Illustrations of Unconscious Memory in Disease*, xi. 124.
Crépieux-Jamin, J., *L'Ecriture et le Caractère*, xiv. 293.
Critical Philosophy, A Criticism of the, (H. Sidgwick) viii. 69, 313; H. Sidgwick on the, (R. Adamson, with Replies) 251, 421, 424, 577.
Croll, J., *The Philosophical Basis of Evolution*, (T. Whittaker) xvi. 268.
Cros, A., *Le Problème*, xvi. 146.
Crossed Fingers, Sense of Doubleness with, (Editor) i. 145.
Crozier, J. B., *The Religion of the Future*, (G. Allen) v. 432; *Civilisation and Progress*, x. 462.
Cunningham, W. (*a*) Political Economy as a Moral Science, iii. 369. (*c*) See A. Véra.
Cunningham, W., *The Influence of Descartes, &c., in England*, i. 573; His "Political Economy as a Moral Science," (D. Syme) iv. 147; *St. Austin and his place in the History of Christian Thought*, xii. 136.
Cutler, C., *Beginnings of Ethics*, xiv. 596.
Cyon, E. de, on the Semicircular Canals and the "Sense of Space," (Editor) iii. 559.
Cyples, W. (*b*) Four New Philosophical Terms, v. 390.
Cyples, W., *An Inquiry into the Process of Human Experience*, (J. Sully) v. 273; Death of, viii. 150.
Czolbe, H., *Grundzüge einer extensionalen Erkenntnisstheorie*, (R. Adamson) i. 404.

D

Dabney, R. L., *Sensualistic Philosophy of the 19th Century*, i. 295.
Danover, *De l'Esprit Moderne*, vi. 444.
Darmesteter, A., *The Life of Words as the Symbols of Ideas*, xii. 134.
Darwin, C. (*a*) Biographical Sketch of an Infant, ii. 285.
Darwin, C., Death of, vii. 458.
Darwin, F., *Life and Letters of Charles Darwin*, xiii. 122.
Data of Ethics, Replies to Criticisms on *The*, (H. Spencer) vi. 82.
Dauriac, L., *Croyance et Realité*, xiv. 601; *Le Réalisme de Reid*, xv. 141.
Davids, T. W. R., *Indian Buddhism*, vii. 146.

DAVIDSON, T. (*a*) Perception, vii. 496. (*c*) See T. Pesch, E. Wallace, Thomas Aquinas, L. Ferri.

Davidson, T., *The Philosophical System of A. Rosmini-Serbati*, vii. 317, (J. B. GIBSON) 398.

DAVIDSON, W. L. (*a*) Botanical Classification, v. 513; The Logic of Dictionary-defining, vi. 212; The Logic of Classification, xii. 233. (*b*) Definition of Consciousness, vi. 406, of Sensation, 551, of Intuition, vii. 304, of Reason, 558; Separation of Questions in Philosophy, ix. 548; Ethics and the Ideal, xiii. 89. (*c*) See J. Veitch.

Davidson, W. L., *The Logic of Definition*, x. 461, (A. SIDGWICK) 588; *Leading and Important English Words*, xii. 135.

Davies, J., *Hindu Philosophy*, vi. 442, (J. B. GIBSON) 587.

DAVIES, W. G. (*a*) The Veracity of Consciousness, ii. 64. (*b*) 'Cogito ergo sum,' ii. 412; Necessary Connexion and Inductive Reasoning, iii. 417.

Day, H. N., *Logical Praxis*, i. 574.

Deaf-mutes, Sense of Dizziness in, (W. JAMES) vi. 412.

Deduction, Induction and, (L. T. HOBHOUSE) xvi. 507.

Definition *de Jure* and *de Facto*, (A. SIDGWICK) iv. 230.

Definitions, On, (E. C. BENECKE) vi. 530.

De la Rive, L., *Sur la Composition des Sensations, &c.*, xiv. 297.

Delbœuf, J., *Théorie générale de la Sensibilité*, i. 296; *La Psychologie comme Science naturelle*, 436; *Logique Algorithmique*, ii. 277; *Eléments de Psychophysique*, viii. 620; *Examen critique de la Loi psychophysique*, ix. 158; *Le Sommeil et les Rêves*, x. 472, (J. SULLY) xii. 115; *Une Visite à la Salpêtrière*, 304; *La Matière brute et la Matière vivante*, (T. WHITTAKER) 601; *De l'Origine des Effets curatifs de l'Hypnotisme*, xiii. 148; *L'Hypnotisme et la Liberté des Représentations publiques*, 617; On Hypnotism and the Nancy School, (EDITOR) xiv. 470; *Magnétiseurs et Médecins*, and, *De l'étendue de l'action curative de l'Hypnotisme*, xv. 448.

DENOVAN, W. (*a*) A Swedenborgian view of the Problem of Philosophy, xiv. 216.

Descartes, The 'Cogito' of, (S. H. HODGSON, A. MAIN, A. BAIN, W. G. DAVIES) i. 568, ii. 126, 259, 412; On the Fundamental Doctrines of, (H. SIDGWICK) vii. 435.

Descours di Tournoy, G., *Del Vero, del Bello e del Bene*, ii. 136; *Sull' Educazione*, iv. 601.

Desdouits, Th., *La Légende tragique de J. Bruno*, x. 615.

Design-Argument, The, (H. M. STANLEY) x. 420.

Desjardins, A., *Les Sentiments moraux au XVIe Siècle*, xii. 472.

Desormeaux, F. D., *Études philosophiques* and *Réflexions et Pensées*, ix. 468.

Dessaignes, J. P., *Études de l'Homme moral*, vii. 605.

Dessoir, M., *Bibliographie des modernen Hypnotismus*, xiv. 152; *K. P. Moritz als Aesthetiker*, 304.

Determinism and Duty, (L. S. BEVINGTON) v. 30.

DEWEY, J. (*a*) The Psychological Standpoint, xi. 1; Psychology as Philosophic Method, 153; Knowledge as Idealisation, xii. 382; On some current Conceptions of the term 'Self,' xv. 58. (*b*) "Illusory Psychology," xii. 83.

Dewey, J., *Psychology*, xii. 301, (EDITOR) 439; *Leibniz's New Essays, &c.*, xiii. 612; *Outlines of a Critical Theory of Ethics*, xvi. 424.

Dictionary-defining, The Logic of, (W. L. DAVIDSON) vi. 212.

Dictionary of Philosophy, xii. 610.

Dieterich, K., *Kant und Newton*, ii. 276; *Grundzüge der Metaphysik*, x. 478.

"Ding-an-Sich," On the English of, (C. READ) viii. 412.

Direction, C. Viguier on Sense of, (EDITOR) vii. 571; Vertigo of, (A. BINET, B. BOSANQUET) x. 156, 317.

Discord, On, (E. GURNEY) iv. 22.

Disinterested Benevolence, The Genesis of, (P. FRIEDMANN) iii. 404.

Dizziness in Deaf-Mutes, Sense of, (W. JAMES) vi. 412.

DONALDSON, H. H. (*a*) On the Temperature-Sense, x. 399; Motor Sensations on the Skin, 557.

Donders, F. C., Death of, xiv. 471.

Donisthorpe, W., *Individualism*, xv. 135.

DONOVAN, J. (*a*) The Festal Origin of Human Speech, xvi. 498.

Donovan, J., *From Lyre to Muse*, (R. WALLASCHEK) xvi. 281.

Döring, A., *Grundzüge der allgemeinen Logik* (I.), v. 589; *Philosophische Güterlehre*, xiv. 150.

Dorner, A., *Das menschliche Erkennen*, xiii. 305.
Dorner, J. A., *System der christlichen Sittenlehre*, xi. 140.
Double Consciousness in Health, (A. Binet) xv. 46.
Doubleness with Crossed Fingers, Sense of, (Editor) i. 145.
Douse, T. Le M. (*b*) Transposition of Traces of Experience, iii. 132.
Dream-Fancy, On the Laws of, (J. Sully) ii. 111.
Dreher, E., *Physiologie der Tonkunst*, xv. 429.
Drobisch, M. W., *Kant's Dinge-an-sich*, x. 313.
Droz, E., *Étude sur le Scepticisme de Pascal considéré dans le Livre des Pensées*, xi. 439.
Drummond, J., *Philo Judaeus*, xiii. 445.
Druskowitz, H., *Moderne Versuche eines Religionsersatzes*, xi. 589; *Wie ist Verantwortung u. Zurechnung ohne Annahme der Willensfreiheit möglich*, xii. 150; *Zur neuen Lehre*, xiii. 306; *Eugen Dühring*, xiv. 156.
Dublin, Philosophy at, (W. H. S. Monck) i. 382.
Du Bois-Reymond, P., *Ueber die Grundlagen der Erkenntnis, &c.*, xvi. 432.
Dubuc, P., *Sur la Méthode en Métaphysique*, xiv. 294.
Dühring, E., and the University of Berlin, ii. 582.
Dumont, L., *Théorie Scientifique de la Sensibilité*, i. 296, (J. Sully) 399; Death of, ii. 283; *Essai biographique sur*, x. 155.
Dunan, C., *Essai sur les Formes à priori de la Sensibilité*, ix. 610; *Les Arguments de Zénon d' Élée contre le Mouvement*, x. 307.
Duncan, W. S., *Conscious Matter*, vi. 293.
Du Prel, C., *Philosophy of Mysticism* (tr. C. C. Massey), xiv. 288; *Kant's Vorlesungen über Psychologie*, 300.
Dutch Universities, Philosophy in the, (J. P. N. Land) iii. 87.
Dvivedi, M. N., *Monism or Advaitism*, xv. 139.
Dwelshauvers, G., *Psychologie de l'Apperception, &c.*, xv. 575.
Dyde, S. W. (*a*) A Basis for Ethics, xiii. 549.

E

Earle, J. (*a*) The History of the Word 'Mind,' vi. 301.
Eastwood, A. (*b*) On Thought-relations, xvi. 243.
Ebbinghaus, H. (*b*) A supposed Law of Memory, xi. 300.
Ebbinghaus, H., *Ueber das Gedächtnis*, x. 315, (J. Jacobs) 454.
Eckehart, the Mystic, Meister, (K. Pearson) xi. 20.
Ecker, A., *Lorenz Oken*, viii. 618.
Edgeworth, F. Y. (*a*) The Hedonical Calculus, iv. 394; The Philosophy of Chance, ix. 223. (*b*) M. Arnold on Butler's Doctrine of Self-Love, i. 570; L. Stephen on Utilitarianism, vii. 446; The Method of Measuring Probability and Utility, xii. 484; The Value of Authority tested by Experiment, xiii. 146; Remarks on Mental Association, &c., xiv. 245.
Edgeworth, F. Y., *New and Old Methods of Ethics*, iii. 146; *Mathematical Psychics*, vi. 293, (W. S. Jevons) 581; *Metretike*, xii. 466.
Editor (*a*) Prefatory Words, i. 1; W. S. Jevons's Formal Logic, 206; Philosophy in London, 531; English Thought in the 18th Century, ii. 352; The Physical Basis of Mind, iii. 24; Philosophy in Education, 241; Psychology and Philosophy, viii. 1; Münsterberg on 'Muscular Sense' and 'Time-Sense,' xv. 524; Valedictory, xvi. 557. (*b*) Sense of Doubleness with Crossed Fingers, i. 145; Logic and the Elements of Geometry, 147, iii. 564; F. Galton on Heredity, i. 267; Azam and Dufay on Double Consciousness, 414, 553; F. Goltz on the Functions of the Cerebrum, ii. 108, 247, v. 254, vii. 299; The Logic of 'If,' ii. 264; Reports on Evolution of Nerves, Trance, Sleep, Study of Types of Character, 565; J. S. Mill's Philosophy tested by W. S. Jevons, iii. 141, 287; E. de Cyon on the Semicircular Canals and the "Sense of Space," 559; G. M. Beard on Experiments with Human Beings, iv. 413; F. Galton on Generic Images and Automatic Representation, 551; Localisation of Brain-Functions, vii. 299; The Action of so-called Motives, 567; C. Viguier on the "Sense of Direction," 571; *The Quarterly Review* on Hobbes, xii. 480; A remarkable case of Amnesia, 636; Leibniz and Hobbes, xiii. 312; The Psychological Theory of Extension, 418; Edmund Gurney, 630; The blind-deaf-mute Helen Keller, xiv. 305; Prof. Delbœuf on Hypnotism

and the Nancy School, 470; Dr. H. Münsterberg on Apperception, xv. 234; Some newly discovered Letters of Hobbes, 440; Prof. L. Stein on Leibniz and Spinoza, xvi. 443. (*c*) See J. Hughlings Jackson, J. E. Cairnes, D. Ferrier, H. Maudsley, R. Shute, F. Pillon, A. Meinong, T. Fowler, E. Renan, T. H. Huxley, W. L. Courtney, H. C. Bastian, A. C. Fraser, H. Siebeck, A. Seth, J. Dewey, F. Max Müller, F. Tönnies, Pierre Janet, J. Pikler.

Edridge-Green, F. W., *Memory*, xiii. 611.

Education as a Science, (A. Bain) ii. 1, 294, iii. 304.

Edwards, T., *Notes on Mill's Examination of Hamilton*, iv. 599.

Efficiency as a Proximate End in Morals, (J. T. Punnett) vi. 350.

Effort, The Feeling of, (W. James) v. 582.

Egger, M. E., *Le Développement de l'Intelligence et du Langage chez les Enfants*, v. 152.

Egger, V., *La Parole intérieure*, vii. 312.

Egoism, The 'Suppression' of, (A. Barratt, H. Sidgwick) ii. 167, 411.

Eicken, H. v., *Gesch. u. System der mittelalt. Weltanschauung*, xiii. 465.

Elam, C., *Winds of Doctrine*, ii. 132.

Eliot, George, Art of, (J. Sully) vi. 378.

Ellis, A. B., *The Tshi-speaking Peoples of the Gold Coast*, xiii. 291; *The Ewe-speaking Peoples, &c.*, xvi. 142.

Ellis, H. H. (*a*) Hinton's later Thought, ix. 384.

Ellis, H., *The Criminal*, xv. 419.

Elsas, A., *Ueber die Psychophysik*, xi. 593.

Emotion, Elements involved in, (J. M'Cosh) ii. 413; What is an? (W. James, E. Gurney, H. R. Marshall) ix. 188, 421, 615.

Empirical Philosophy, Incoherence of, (H. Sidgwick) vii. 533.

Empiricist Position, The (A. Bain) xiv. 369.

Ende, U. van, *Histoire Naturelle de la Croyance* (I.), xii. 623.

English Philosophy, Kuno Fischer on, (C. Read) iv. 346.

English Psychologists and Beneke, Herbart, the, (G. F. Stout) xiv. 1.

English Thought in the 18th Century, (Editor) ii. 352.

Enoch, W., *Der Begriff der Wahrnehmung*, xv. 145.

Epicurus, T. Gomperz on, i. 443, ii. 434, v. 155.

Ercole, P. d', *Il Teismo filosofico cristiano* (I.), ix. 319; *Notizia degli Scritti &c., di P. Ceretti*, xii. 146.

Erdmann, B., *Die Axiome der Geometrie*, ii. 432, (J. P. N. Land) iii. 551; Kant's *Prolegomena*, 430; Kant's *Kritik der reinen Vernunft*, iv. 447; *Kant's Kriticismus in der ersten und in der zweiten Auflage der K.d.r.V.*, 447; *Nachträge zu Kant's K.d.r.V.*, vi. 600; *Reflexionen Kant's zur kritischen Philosophie* (I. 1), vii. 454.

Erdmann, J. E., *A History of Philosophy* (tr.), xv. 132.

Erhardt, F., *Kritik der Kantischen Antinomienlehre*, xiii. 618.

Espinas, A., *Des Sociétés animales*, ii. 580, (J. Collier) iii. 105, (2me éd.) iv. 140.

Essays in Philosophical Criticism (by A. Seth, R. B. Haldane, and Others), viii. 135, (R. Hodgson) 580.

Ethical Alternatives, (J. T. Punnett) x. 85.

Ethical Conceptions, Some Fundamental, (H. Sidgwick) xiv. 473, (T. Fowler) xv. 89, (L. A. Selby-Bigge) 93.

Ethical First Principles, The establishment of, (H. Sidgwick) iv. 106.

Ethics, Evolution and, (F. Pollock) i. 334; And Politics, (A. Barratt) ii. 453; The Philosophy of, (A. J. Balfour) iii. 67, 276; And Psychogony, (A. Barratt) 277; On some points in, (A. Bain) viii. 48; And Sociology, (W. Wallace) 222; "Idiopsychological," (H. Sidgwick) xii. 31; And the Ideal, (W. L. Davidson) xiii. 89; A Basis for, (S. W. Dyde) 549; Of Evolution, Logic of the, (W. Mitchell) xv. 342.

Eucken, R., *Geschichte der philosophischen Terminologie*, iv. 143; *Prolegg. zu Forschungen über die Einheit des Geisteslebens*, x. 477; *Beitr. zur Gesch. der neuern Philosophie*, xi. 298; *Die Philosophie des Thomas v. Aquino u. die Kultur der Neuzeit*, 445; *Zur Würdigung Comtes, &c.*, xii. 477; *Die Einheit des Geisteslebens*, xiii. 461; *Die Lebensanschauungen der grossen Denker*, (T. Whittaker) xv. 284.

Evans, C. (*b*) Temperature and Touch, iv. 147.

Evellin, F., *Infini et Quantité*, vi. 295.

Everett, C. C., *Fichte's Science of Knowledge*, xi. 127; *Poetry, Comedy and Duty*, xiv. 146.
Evil as a Mystery, Our Right to regard, (B. Bosanquet) viii. 419.
Evolution in its application to Practice, (H. Sidgwick) i. 52.
Evolution, And Ethics, (F. Pollock) i. 334; Ethical Method of, (D. McG. Means) v. 396; And Sense of Sin, (N. Pearson) vii. 544; Logic of the Ethic of, (W. Mitchell) xv. 342.
Existence, And Descartes' 'Cogito,' (A. Bain) ii. 259; Mill's Propositions of mere, (J. H. Levy) x. 417.
Experience, G. H. Lewes on the Postulates of, (A. Bain) i. 146; The Postulates of, (R. Noel) 426.
Experimental Certainty, (L. T. Hobhouse) xv. 251.
Experimental Psychology, (G. S. Hall) x. 245; The need of a Society for, (J. Jacobs) xi. 49.
Extempore Speaking, Reflex Effects of, (D. Macgregor) vi. 546.
Extension, The Psychological Theory of, (Editor) xiii. 418, (E. Montgomery) 579, (W. James) xiv. 107, (J. Ward) 109.
External Reality, The Consciousness of, (R. Hodgson) x. 321; The Coefficient of, (J. M. Baldwin) xvi. 389.

F

Faber, E., *The Mind of Mencius* (tr.), vii. 149.
Fabian Essays in Socialism, xv. 290.
Faggi, A., *La Filosofia dell' Inconsciente, &c.*, xv. 428.
Fairbairn, A. M., *Studies in the Philosophy of Religion and History*, i. 573.
Faith and Conduct, xiii. 284.
Falckenberg, R., *Geschichte der neuern Philosophie*, xi. 444.
Fallacy, The Localisation of, (A. Sidgwick) vii. 55.
Farrer, J. A., *Adam Smith*, vi. 289.
Faug, B., *Les vraies Bases de la Philosophie*, xi. 129.
Fauth, F., *Das Gedächtnis*, xiv. 153.
Favre, Mde. J., *La Morale des Stoiciens*, xiii. 136; *La Morale de Socrate*, 616; *La Morale d'Aristote*, xiv. 295.
Featherman, A., *Social History of the Races of Mankind* (V.), vii. 153, (I.), x. 300, (II.), xii. 295, xiii. 292.
Fechner, G. T., An Attempt to Interpret his Law, (J. Ward) i. 452; *Vorschule der Æsthetik*, (J. Sully) ii. 102; *In Sachen der Psychophysik*, iii. 293; *Revision der Hauptpunkte der Psychophysik*, viii. 457; Death of, xiii. 150, 317; *Elemente der Psychophysik* (2te Aufl.), xv. 298.
Fechtner, E., *Die praktische Philosophie, &c.*, xiii. 620.
Feeling, On some alleged Distinctions between Thought and, (R. Flint) ii. 112; And Emotion, (H. M. Stanley) xi. 66; As Indifference, (A. Bain) xii. 576, xiv. 97, (W. E. Johnson) xiii. 80, (J. Sully) 248, (F. A. Mason) 253.
Feelings, A Classification of, (C. Mercier) ix. 325, 509, x. 1; Mr. Mercier's Classification of, (C. Read) xi. 76.
Féré, C., (et A. Binet) *Le Magnétisme Animal*, xii. 144; *Sensation et Mouvement*, 471; *Dégénérescence et Criminalité*, xiii. 450.
Ferraz, M., *Spiritualisme et Libéralisme*, xii. 472.
Ferri, L., *Sulla Dottrina psicologica dell' Associazione*, iv. 294; *La Psychologie de l'Association*, viii. 308, (T. Davidson) x. 124.
Ferrier, D., *The Functions of the Brain*, (Editor) ii. 92, (2nd ed.) xii. 132; *The Localisation of Cerebral Disease*, iv. 137; *On Cerebral Localisation*, (W. L. Mackenzie) xvi. 104.
Ferrier, J., Some questionable Propositions in the *Institutes* of, (A. Main) ii. 402.
Ferrière, E., *La Vie et l'Ame*, xiv. 147.
Fetishism, F. Max Müller and, (A. Lang) iv. 453.
Feuerbach, L., *The Essence of Christianity* (tr.), vi. 596.
Fichte, I. H., Death of, iv. 603.
Fichte, J. G., *The Science of Knowledge* (tr.), *The Science of Rights* (tr.), xv. 133; *Popular Works of*, 297.
Finck, H. T., *Romantic Love and Personal Beauty*, xii. 611.
Fischer, E. L., *Ueber das Princip der Organisation* and *Der sogenannte Lebensmagnetismus*, ix. 161; *Theorie der Gesichtswahrnehmung*, xvi. 549.
Fischer, Karl, *Biblische Psychologie, &c.*, xiv. 462; *Glauben oder Wissen?* xv. 581.
Fischer, Kuno, *Geschichte der neuern Philosophie* (I., III., IV., 3te Aufl.), iv. 292, v. 587, viii. 458, (V. 2te Aufl.) x. 147; I. 1 (tr. Gordy), xii. 464; (II. 3te Aufl.) xv. 142; *A Critique of Kant* (tr. Hough), xiii. 290.
Fischer, L., *Grundr. d. Systems der Philosophie, &c.*, xv. 144.

Fiske, J., *Darwinism and other Essays*, iv. 599; *Man's Destiny viewed in the light of his Origin*, x. 302: *The Idea of God as affected by Modern Knowledge*, xi. 123.

Fitzgerald, P. F., *Philosophy of Self-Consciousness*, vi. 602; *On the Principle of Sufficient Reason*, xii. 614; *A Protest against Agnosticism*, xv. 571.

Fleming, W., *Vocabulary of Philosophy* (3rd ed. H. Calderwood), (R. Adamson) ii. 98, (4th ed.) xii. 300.

Flint, R. (*a*) Associationism and the Origin of Moral Ideas, i. 321. (*b*) On some alleged Distinctions between Thought and Feeling, ii. 112. (*c*) See F. Brentano, S. Turbiglio, J. Martineau.

Flint, R., *Theism*, iii. 150; *Antitheistic Theories*, iv. 598; *Vico*, (D. G. Ritchie) ix. 579.

Flournoy, T., *Métaphysique et Psychologie*, xv. 574.

Fonsegrive, G. L., *Essai sur le Libre Arbitre*, xii. 621, (T. Whittaker) xiii. 112; *Eléments de Philosophie* (I.), xvi. 293.

Fontana, G., *Idea per una Filosofia della Storia*, ii. 136; *L'Epopœa e la Filos. della Storia*, iii. 582; *Genesi della Filos. morale contemporanea*, x. 310; *La Morale e il Diritto*, xiv. 148.

Fordyce, J. (*b*) On E. R. Conder's *Basis of Faith*, iv. 297.

Forgetfulness, (R. Verdon) ii. 437.

Fortlage, K., *Beiträge zur Psychologie*, i. 153; Death of, vii. 158.

Fouillée, A., *L'Idée moderne du Droit*, iv. 141; *Histoire de la Philosophie* (nouv. éd.), 600; *L'Idée moderne du Droit en Allemagne, en Angleterre et en France*, (H. Sidgwick) v. 135; *La Science sociale contemporaine*, 586, (J. Collier) vi. 137; *Critique des Systèmes de Morale contemporains*, ix. 157, (W. R. Sorley) 590; *La Liberté et le Déterminisme* (2me éd.), 469, (T. Whittaker) x. 448; *La Morale, &c., d'après Guyau*, xiv. 295, (T. Whittaker) 433; *L'Avenir de la Métaphysique, &c.*, 601, (J. Seth) xv. 401; *L'Evolutionnisme des Idées-forces*, 427, (J. Seth) xvi. 119; *L'Enseignement au point de vue national*, 291.

Fowler, T. (*b*) H. Sidgwick on *Progressive Morality*, x. 481; Some fundamental Ethical Controversies, xv. 89.

Fowler, T., *Inductive Logic* (3rd ed.), iii. 426, (5th ed.) xv. 148; Bacon's *Novum Organum*, iii. 426, (Editor) iv. 125, (2nd ed.) xv. 148; *Locke*, vi. 288; Locke's *Conduct of the Understanding*, 293; *Bacon*, 440; *Shaftesbury and Hutcheson*, vii. 603; *Progressive Morality*, x. 140, (H. Sidgwick, with Reply) 266, 481; *The Principles of Morals*, (I.) xi. 436, (II.) xii. 466, (H. Rashdall) 589.

Fox, C., References to J. S. Mill in the *Journal and Letters of*, vii. 318.

France, Philosophy in, (T. Ribot) ii. 366.

Franck, A., *Dictionnaire des Sciences Philosophiques*, i. 439; *Essais de Critique Philosophique*, x. 471; *Philosophie du Droit civil*, xi. 289.

Frankland, F. W. (*b*) The Doctrine of Mind-Stuff, vi. 116; J. Royce on Mind-Stuff and Reality, vii. 110.

Franklin, C. L. (*a*) Some proposed Reforms in Common Logic, xv. 75. (*b*) Mill's Natural Kinds, xiii. 83. (*c*) See E. E. C. Jones.

Franklin, F. (*b*) Mill's Natural Kinds, xiii. 83.

Fraser, A. C. (*a*) Philosophical Development, xv. 1.

Fraser, A. C., *Selections from Berkeley* (2nd ed.), iv. 286, (3rd ed.) x. 143; *Berkeley*, vi. 291, (Editor) 421; *Locke*, xv. 417.

Frauenstädt, J., *Neue Briefe über die Schopenhauer'sche Philosophie*, (J. A. Stewart) i. 252; Death of, iv. 297.

Frazer, J. G., *The Golden Bough*, xv. 567.

Free, H., *Die Lehre Herbart's von der menschlichen Seele*, xi. 138.

Free-will, An Empirical Theory of, (G. A. Simcox) iv. 469; W. G. Ward on, (A. Bain, S. H. Hodgson) v. 116, 226, vi. 107; A. Bain on, (W. G. Ward) v. 264; Observations and Inferences on, (F. Galton) ix. 406; And Compulsory Determinism, (S. H. Hodgson) x. 532; The Kantian Conception of, (H. Sidgwick) xiii. 405; An Analysis, (S. H. Hodgson) xvi. 161.

Frege, G., *Begriffsschrift*, v. 297.

Freyer, P., *Beispiele zur Logik*, xv. 296.

Friedländer, M., *The Guide of the Perplexed of Maimonides*, (I. Abrahams) xi. 97.

Friedmann, P. (*b*) The Genesis of Disinterested Benevolence, iii. 404.

Frith, I., *Life of Giordano Bruno*, xii. 296.

Fröbel, F., *Autobiography of* (tr.), xi. 438.
Fröbel, K. F., *Future Science of Existence or Ontology*, vi. 443.
Frohschammer, J., *Die Phantasie als Grundprincip des Weltprocesses*, (D. W. Simon) ii. 398; *Monaden und Weltphantasie*, iv. 294; *Ueber die Bedeutung der Einbildungskraft in der Phil. Kant's und Spinoza's*, v. 153; *Ueber die Principien der Aristotelischen Phil. u. die Bedeutung der Phantasie in derselben*, vi. 601; *Die Phil. als Idealwissenschaft*, ix. 317; *Die Phil. des Thomas v. Aquino*, xv. 145.
Frontera, G., *Les Arguments de Zénon d'Elée contre le Mouvement*, xvi. 545.
Fry, D. P., *Lunacy Acts*, ii. 431.
Fullerton, G. S. (*a*) Conceivability and the Infinite, xi. 186.
Fullerton, G. S., *The Conception of the Infinite*, xii. 468; *A plain Argument for God*, xiv. 597; *On Sameness and Identity*, xv. 573.
Funck-Brentano, T., *Les Principes de la Découverte*, xi. 130.

G

Galton, F. (*a*) Statistics of Mental Imagery, v. 301; Supplementary Notes on "Prehension" in Idiots, xii. 79; Remarks on Mental Tests and Measurements, xv. 380. (*b*) Free-will: Observations and Inferences, ix. 406.
Galton, F., On a Theory of Heredity, i. 267; On Study of Types of Character, ii. 573; On Generic Images and Automatic Representation, (Editor) iv. 551; On Statistics of Mental Imagery, (A. Bain) v. 564; *Inquiries into Human Faculty and its Development*, viii. 453; *Natural Inheritance*, xiv. 286, (J. Venn) 414.
Ganser, A., *Die Freiheit des Willens, &c.*, xvi. 434.
Garden, F., *A Dictionary of Philosophical Terms*, iii. 291.
Garofalo, R., *La Criminologie*, xiii. 450.
Gass, W., *Optimismus u. Pessimismus*, i. 298; *Gesch. der christlichen Ethik*, xii. 306, 474.
Gavanescul, J., *Die Pädagogischen Ansichten John Locke's, &c.*, xiii. 141.
Geddes, P., *An Analysis of the Principles of Economics* (I.), x. 467; *The Evolution of Sex*, xv. 134.
Geiger, L., *Contributions to the History of the Development of the Human Race* (tr.), vi. 148, (G. Allen) 278.
Geil, G., *Ueber die Abhängigkeit Locke's von Descartes*, xiii. 142.
Gener, P., *La Mort et le Diable*, vi. 294.
Generalisations of Science, The, (C. Ll. Morgan) xii. 88.
Geometrical Axioms, The Origin and Meaning of, (H. Helmholtz) i. 301, iii. 212.
Georgov, I., *Montaigne als Vertreter des Relativismus, &c.*, xiv. 605.
Gerber, G., *Die Sprache als Kunst* (2te Aufl.) and *Die Sprache und das Erkennen*, x. 314.
Gerhard, C., *Kant's Lehre von der Freiheit*, xi. 136.
Germ-plasm and the Immortal Soul, The Undying, (R. v. Lendenfeld) xvi. 92.
Germany, Philosophy in, (W. Wundt) ii. 493.
Geulincx and his Works, (J. P. N. Land) xvi. 223; *Opera Philosophica* (I.), 552.
Gibson, J. B. (*b*) "A New Departure in Metaphysics," vi. 542. (*c*) See J. Sully, J. Davies, T. Harper, T. Davidson, A. Rosmini, *The Alternative*, St. G. Mivart.
Gifford, Lord, Foundation of Lectureships in Natural Theology, xii. 318, xiii. 318, xiv. 472.
Ginsberg, H., *Die Ethik des Spinoza im Urtexte* and *Der Briefwechsel des Spinoza im Urtexte*, (A. B. Lee) ii. 273.
Giżycki, G. v., *Die Lamarck-Darwin'sche Entwicklungstheorie*, ii. 132; *Die Philosophie Shaftesbury's*, 133; *Die Ethik David Hume's*, iii. 429; *Grundzüge der Moral*, viii. 459; *Kant u. Schopenhauer*, xiv. 152; *Moralphilosophie*, 152, (C. Read) 278, (tr. S. Coit) xv. 133.
Giżycki, P. v., *Bemerkungen über den Wert der Naturphilosophie des Epikur*, ix. 472; *Autoritäten*, xiv. 156.
Glanvill, J., *Scepsis Scientifica* (ed. J. Owen), x. 611.
Glogau, G., *Steinthal's Psychologische Formeln*, i. 575; *Abriss der philosophischen Grund-Wissenschaften*, (I.) v. 588, (II.) xiii. 462; *Grundriss der Psychologie*, x. 315, (J. Sully) 451.
Godwin, J. H., *Intellectual Principles*, x. 143; *Active Principles*, 614.
Goebel, J., *Ueber tragische Schuld und Sühne*, x. 314.
Goitein, H., *Der Optimismus u. Pessim. in der jüdisch. Religionsphil.*, xv. 580.
Goldhammer, L., *Die Psychologie Mendelssohn's, &c.*, xii. 305.

Gomperz, T., On Epicurus, i. 443, ii. 434, v. 155; *John Stuart Mill*, xiv. 606.
Goodwin, A. (*c*) See W. Pater, G. Teichmüller, B. Jowett.
Gore, G., *The Art of Scientific Discovery*, iv. 136; *The Scientific Basis of National Progress*, vii. 450.
Göring, C. T., Death of, iv. 603.
Gorman, T. M., *Christian Psychology*, i. 295.
Gough, A. E., *The Philosophy of the Upanishads*, viii. 136.
Gourd, J.-J., *Le Phénomène*, xiv. 147, (T. Whittaker) 437.
Gowers, W. R. Pathological Reports, i. 272, 554.
Gowers, W. R., *Lectures on the Diagnosis of Diseases of the Brain*, xi. 438.
Graber, V., *Zur Erforschung des Helligkeits- u. Farbensinnes der Tiere*, x. 148.
Grabowsky, N., *Ueber die Kunst glücklich zu werden*, xiv. 156.
Grafé, A., *Paralysies d'origine psychique*, xv. 291.
Graham, W., *The Creed of Science*, vi. 442, (W. C. Coupland) 563; *The Social Problem*, xi. 586.
Granville, J. M., *The Care and Cure of the Insane*, ii. 431.
Grassmann, R., *Die Menschenlehre*, ix. 611.
Greef, G. de, *Introduction à la Sociologie*, xiv. 458.
Greek Philosophy to Modern Thought, The Relation of, (A. W. Benn) vii. 65, 231.
Green, T. H. (*a*) Can there be a Natural Science of Man? vii. 1, 161, 321. (*b*) Hedonism and Ultimate Good, ii. 266.
Green, T. H., Death of, vii. 457; *Prolegomena to Ethics*, viii. 454; Last Work of, (E. Caird) 544; His Metaphysics of Knowledge, (A. J. Balfour) ix. 73; His Ethics, (H. Sidgwick) 169; Another View of His Last Work, (H. Calderwood) x. 73; *Works of* (I.), 461, (II.), xi. 432, (A. Seth) xii. 93, (III.), xiv. 139.
Griffith, T., *Behind the Veil*, ii. 131; *The A. B. C. of Philosophy*, v. 293.
Grimm, E., *Zur Gesch. d. Erkenntnissproblems*, xvi. 149.
Grimm, J., *Teutonic Mythology*, (tr. I.), v. 292.
Groos, K., *Die reine Vernunftwissenschaft*, xiv. 461.
Grosse, E., *H. Spencer's Lehre von dem Unerkennbaren*, xvi. 149.
Grote, G., *Fragments on Ethical Subjects*, (A. Bain) i. 150; *Aristotle* (2nd ed.), v. 292; *Plato and the Other Companions of Socrates* (new ed.), x. 463.
Grote, J., *A Treatise on the Moral Ideals*, ii. 130, (H. Sidgwick) 239.
Grote, N., *Souvidenia kak Predmet naoutschnago Analisa*, iv. 144.
Ground, W. D., *An Examination of H. Spencer's Philosophy*, viii. 617.
Gruber, H., *August Comte, &c.*, xv. 143; *Der Positivismus, &c.*, xvi. 547.
Grundy, W., *Aristotelianism*, xv. 135.
Grung, F., *Das Problem der Gewissheit*, xi. 589.
Guggenheim, M., *Die Lehre vom apriorischen Wissen, &c., in der Sokratisch-Platonischen Philosophie*, xi. 135.
Gumplowicz, L., *Der Rassenkampf*, viii. 621; *Grundriss der Sociologie*, x. 622.
Günther, A., *Anti-Savarese*, viii. 140.
Gurney, E. (*a*) On Discord, iv. 22; Relations of Reason to Beauty, 482; Monism, vi. 153; The Utilitarian 'Ought,' vii. 349; *Natural Religion*, viii. 198; The Stages of Hypnotism, ix. 110; The Problems of Hypnotism, 477; Hallucinations, x. 161; Further Problems of Hypnotism, xii. 212, 397. (*b*) The Psychology of Music, vii. 89; The Passage from Stimulus to Sensation, 295; The Utilitarian 'Ought,' viii. 101; 'What is an Emotion?' 421; Hallucination of Memory and 'Telepathy,' xiii. 415.
Gurney, E., *The Power of Sound*, vi. 145, (J. Sully) 270; On the Utilitarian 'Ought,' (M. Martin) vii. 554; *Phantasms of the Living*, xii. 135, (C. Ll. Morgan) 275, (trad. Fr.) xvi. 545; *Tertium Quid*, xiii. 122; Death of, 472, (Editor) 630.
Guthrie, M., *Theories of Volition*, iii. 150; *On Mr. Spencer's Formula of Evolution*, iv. 602, v. 150; *On Mr. Spencer's Unification of Knowledge*, vii. 449, (G. Allen) viii. 116; *On Mr. Spencer's Data of Ethics*, ix. 162.
Guyau, M., *La Morale d'Épicure et ses Rapports avec les Doctrines contemporaines*, iv. 140, (H. Sidgwick) 582, (3me éd.) xi. 128; *La Morale Anglaise contemporaine*, iv. 446, (F. Pollock) v. 280; *Vers d'un Philosophe*, vi. 445; *Les Problèmes de l'Esthétique contemporaine*, ix. 468, (G. Allen) xii. 119; *Esquisse d'une Morale sans Obligation ni Sanction*, x. 146, (W. R. Sorley) 276; *L'Irréligion de l'Avenir*, xii.

143 ; Death of, xiii. 470 ; *L'Art au point de vue sociologique*, xiv. 600, (J. Sully) xv. 279 ; *Education et Hérédité*, 140, (J. Sully) 279 ; *Genèse de l'Idée de Temps*, 427.

H

Habit and Progress, (A. W. Benn) xi. 243.
Häckel, E., *The Pedigree of Man* (tr.), viii. 456.
Haddon, C., *The Larger Life*, (S. H. Hodgson) xi. 257.
Haeghen, V. Vander, *Geulincx*, xiii. 298.
Haldane, J. S. (*a*) Life and Mechanism, ix. 27.
Haldane, R. B. (*b*) Hegelianism and Psychology, iii. 568 ; Hegel and his recent Critics, xiii. 585.
Haldane, R. B., *Life of Adam Smith*, xii. 618.
Hall, G. S. (*a*) The Muscular Perception of Space, iii. 433 ; Philosophy in the United States, iv. 89 ; Laura Bridgman, 149 ; Reaction-time and Attention in the Hypnotic State, viii. 170 ; Bilateral Asymmetry of Function, ix. 93 ; Motor Sensations on the Skin, x. 557 ; Studies of Rhythm (I.), xi. 55. (*b*) Recent Researches on Hypnotism, vi. 98 ; Experimental Psychology, x. 245.
Hall, G. S., On the Perception of Colour, (G. Allen) iv. 267 ; *Aspects of German Culture*, vi. 444.
Hall, L., *A new Theory of Necessary Truths*, xiv. 145.
Haller, L., *Alles in Allen*, xiii. 619.
Hallucinations, with Supplementary Note, (E. Gurney) x. 161, 316 ; Of Memory and 'Telepathy,' (J. Royce) xiii. 244, (E. Gurney) 415.
Halstead, G. B. (*b*) W. S. Jevons's Criticism of Boole's Logic, iii. 134.
Hamilton, E. (*b*) G. H. Lewes's Doctrine of Sensibility, iv. 256 ; Death of, vii. 319.
Hammond, W. A., *Diseases of the Nervous System* (6th ed.), i. 436.
Handley, M. S., *First Lessons in Philosophy*, viii. 618.
Happiness or Welfare, (F. Pollock) ii. 269.
Hardy, E., *Der Begriff der Physis in der Griechischen Philosophie*, x. 149.
Hardy, R. S., *Manual of Buddhism* (2nd ed.), v. 437.
Harley, R. (*a*) The Stanhope Demonstrator, iv. 192.
Harms, F., *Die Philosophie seit Kant*, ii. 133 ; *Die Philosophie in ihrer Geschichte*, iii. 292 ; *Logik*, xi. 594.
Harper, T. (*a*) The Word, viii. 372.
Harper, T., *The Metaphysics of the School* (I.-III. 1), v. 289, vi. 441, ix. 464, (J. B. Gibson) vii. 114, 261, ix. 583.
Harpf, A., *Die Ethik des Protagoras*, ix. 613.
Harris, G., *Nature and Constitution of Man*, i. 438.
Harris, W. T., *Introduction to the Study of Philosophy* (M. Kies), xvi. 289 ; *Hegel's Logic*, 424.
Hartmann, E. v., *Krit. Grundlegung des Transcendentalen Realismus*, (J. S. Henderson) i. 407, (3te Aufl.) xi. 137 ; *Phänomenologie des sittlichen Bewusstseins*, iv. 142, (W. C. Coupland) 278 ; *Zur Gesch. u. Begründung des Pessimismus*, vi. 150, (J. Sully) 285 ; *Das Religiöse Bewusstsein der Menschheit*, vii. 156, (C. Read) 288 ; *Die Religion des Geistes*, viii. 139 ; *Philosophy of the Unconscious* (tr.), ix. 466 ; *Die deutsche Aesthetik seit Kant*, xii. 308 ; *Philosophie des Schönen*, xiii. 301 ; *Lotze's Philosophie*, xiv. 603 ; *Das Grundproblem der Erkenntnisstheorie*, xv. 146.
Hartmann, F., *The Life of Philippus Theophrastus*, xii. 140.
Hartmann, R., *Anthropoid Apes*, xi. 125.
Hartwell, E. M. (*a*) Bilateral Asymmetry of Function, ix. 93.
Hatch, E., *The Influence of Greek Ideas and Usages on the Christian Church*, xvi. 286.
Hatch, W. M., *The Moral Philosophy of Aristotle*, v. 435.
Hauréau, B., *Histoire de la Philosophie Scolastique* (II. 1), v. 586.
Hawkins, J., *Phases of Modern Doctrine*, iii. 291.
Hayem, A., *L'Être Social*, vi. 444.
Hazard, R. G., *Man a Creative First Cause*, ix. 157.
Hedonical Calculus, The, (F. Y. Edgeworth) iv. 394.
Hedonism and Ultimate Good, (H. Sidgwick, T. H. Green) ii. 27, 266.
Hegel, G. W. F., *The Philosophy of Art* (tr.), vi. 149, xi. 437, (*Introduction to*) xii. 134, (D. G. Ritchie) 597 ; An Exposition and Criticism of, (A. Seth) vi. 513 ; His Conception of Nature, (S. Alexander) xi. 495 ; *Briefe von und an*, xii. 474, (B. Bosanquet) xiii. 144 ; And his recent

Critics, (R. B. Haldane) 585, (A. Seth) xiv. 116.
Hegelian Contributions to English Philosophy, Recent, (T. M. Lindsay) ii. 476.
Hegelianism and Psychology, (R. B. Haldane) iii. 568.
Hegelisms, On some, (W. James) vii. 186.
Heidenhain, R., *Animal Magnetism* (tr.), v. 583.
Heine, H., *Religion and Philosophy in Germany* (tr.), vii. 451.
Helmholtz, H. (*a*) The Origin and Meaning of Geometrical Axioms, i. 301, iii. 212.
Helmholtz, H. L. F., *On the Sensations of Tone* (tr. 2nd ed.), x. 612; His Theory of Space-perception, (J. H. Hyslop) xvi. 54.
Heman, C. F., *Die Erscheinung der Dinge in der Wahrnehmung*, vi. 598.
Henderson, J. S. (*a*) Lord Amberley's Metaphysics, ii. 55. (*c*) See C. Hermann, E. v. Hartmann.
Henle, J., *Anthropologische Vorträge*, ii. 433.
Hensel, P., *Ethisches Wissen u. eth. Handeln*, xv. 147.
Herbart, J. F., *Sämmtliche Werke* (I.), viii. 140.
Herbart compared with the English Psychologists and with Beneke, (G. F. Stout) xiv. 1.
Herbart's Disciples, The Psychological work of, (G. F. Stout) xiv. 353.
Herbartian Psychology, The, (G. F. Stout) xiii. 321, 473.
Herbert, T. M., *The Realistic Assumptions of Modern Science examined*, iv. 145, (R. Adamson) 570.
Hereditary Transmission of Injuries to the Nervous System, Brown-Séquard on, i. 134.
Heredity, F. Galton on a Theory of, i. 267.
Herford, C. H., *The Stoics as Teachers*, viii. 136.
Hermann, C., *Sprachwissenschaft nach ihrem Zusammenhange mit Logik, &c.*, (J. S. Henderson) i. 260; *Der Gegensatz des Classischen und des Romantischen in der neuern Philosophie*, ii. 433; *Hegel u. die logische Frage in der Philosophie der Gegenwart*, iii. 582.
Hermann, L., *Handbuch der Physiologie* (III.), v. 587.
Herzen, A. (*b*) The Physical Law of Consciousness, iv. 268; Temperature and Touch, 298.
Herzen, A., *Analisi fisiologica del Libero Arbitrio Umano*, iv. 294; *Les Conditions physiques de la Conscience*, xii. 145; *Grundl. einer allgem. Psychophysik*, xv. 295.
Heussler, H., *Francis Bacon u. seine geschichtl. Stellung*, xiv. 304.
Heymans, G., *Die Gesetze u. Elem. des wiss. Denkens*, xv. 580.
Heymons, C., *E. v. Hartmann*, vii. 453.
Hill, A., *The Plan of the Central Nervous System*, x. 612.
Hill, D. J., *The Elements of Psychology*, xiii. 297.
Hinton, C. H., *Scientific Romances* (I.-V.), x. 467, 613, xi. 587, xii. 139, (VII.-VIII.), xiv. 144; *A New Era of Thought*, 144.
Hinton, J., (J. F. Payne) i. 247; *Life and Letters of*, iii. 289; *Chapters on the Art of Thinking*, iv. 289; *Philosophy and Religion*, (S. H. Hodgson) vii. 255; His Later Thought (H. H. Ellis) ix. 384; *The Law-breaker and the Coming of the Law*, x. 138.
Hirst, T. A. (*b*) Logic and the Elements of Geometry, iii. 564.
Historical Method, The, (H. Sidgwick) xi. 203.
History, The Science of, (J. M. Macdonald) x. 363.
Hobbes, T., F. Tönnies on, v. 155; Collation of MSS. of, ix. 618; *The Quarterly Review* on, (Editor) xii. 480; Leibniz and, (Editor) xiii. 312; *Elements of Law* and *Behemoth*, ed. Tönnies, (Editor) xiv. 429; Some newly-discovered Letters of, (Editor) xv. 440.
Hobhouse, L. T. (*a*) The Principle of Induction, xvi. 80; Induction and Deduction, 507. (*b*) Experimental Certainty, xv. 251.
Hochegger, R., *Die geschichtliche Entwicklung des Farbensinnes*, x. 148.
Hodgetts, E. A. B. (*c*) See A. Smirnova.
Hodgson, J. M., *Philosophy and Faith*, x. 301.
Hodgson, R. (*a*) The Consciousness of External Reality, x. 321. (*b*) Feelings of Relation, x. 250. (*c*) See *Essays in Philosophical Criticism*.
Hodgson, S. H. (*a*) Philosophy and Science, i. 67, 223, 351; On Causation, iv. 500; W. G. Ward on Free-will, v. 226; C. Renouvier's Philosophy: Logic—Psychology, vi. 31, 173; The Metaphysical Method in Philosophy, ix. 48; Free-will and

Compulsory Determinism, x. 532; Illusory Psychology, xi. 478; On the Conditions of a True Philosophy, xiii. 153; Free-will: an Analysis, xvi. 161. (*b*) M. Arnold on Descartes' 'Cogito ergo sum,' i. 568; Kant's Analytic and Synthetic Judgments, ii. 118; Reply to A. Main on 'Cogito ergo sum,' 128; The 'Achilles and Tortoise,' v. 386; Free-will: A Rejoinder to W. G. Ward, vi. 107; Subjectivity in Philosophy, viii. 92; "Illusory Psychology," a Rejoinder, xii. 314; Subject and Object in Psychology, 423. (*c*) See J. Hinton, C. Haddon.

Hodgson, S. H., On G. H. Lewes's view of Philosophy, (A. Main) i. 292; On 'Cogito ergo sum,' (A. Main, with Reply) ii. 126, 128; *The Philosophy of Reflexion*, iii. 424, (C. Read) v. 60; *The Relation of Philosophy to Science*, x. 142; *Philosophy and Experience*, xi. 123; *The Reorganisation of Philosophy*, xii. 138; *The Unseen World*, xiii. 128.

Höffding, H., *Psychologie in Umrissen*, &c., xii. 476, (J. Sully) 606, (Eng. trans., M. E. Lowndes) xvi. 285; *Einleitung in die Englische Philosophie* (tr.), xiv. 606.

Holland, Psychology in, (T. M. Lindsay) i. 144.

Holmes-Forbes, A. W., *The Science of Beauty*, vi. 292; *Know Thyself*, xiv. 450.

Hopkins, E., *Life and Letters of James Hinton*, iii. 289.

Hoppe, J. J., *Die Schein-Bewegungen*, iv. 293; *Das Auswendiglernen*, x. 153; *Der psychologische Ursprung des Rechts*, xi. 133.

Horny, F. W., *Die Utilitarische Moralphilosophie in England*, viii. 141.

Horwicz, A., *Psychologische Analysen* (II., 2), iii. 294; *Moralische Briefe*, 581; On the Organic Sensations, (J. Sully) vii. 302.

Huber, J., *Die Forschung nach der Materie*, (R. Adamson) iii. 389; Death of, iv. 603.

Hughes, E. P. (*b*) Remarks on Mental Association, &c., xiv. 246.

Hughes, H., *Principles of Natural and Supernatural Morals*, xvi. 420.

Hughes, T., *Economy of Thought*, i. 154.

Hume, *Treatise of Human Nature* (ed. L. A. Selby-Bigge), xiv. 143; *Letters of, to William Strahan* (ed. G. B. Hill), 286.

Hunter, W. A., *Exposition of Roman Law*, i. 575.

Huxley, T. H., *Hume*, (Editor) iv. 270.

Hypnotic State, Reaction-time and Attention in the, (G. S. Hall) viii. 170; Hypnotic Hyperacuity of Vision, On an alleged case of, (F. W. H. Myers) xii. 154.

Hypnotism, Recent Researches on, (G. S. Hall) vi. 98; The Stages of, (E. Gurney) ix. 110; Visual Hallucinations in, (A. Binet) 413; The Problems of, (E. Gurney) 477; Further Problems of, (E. Gurney) xii. 212, 397; Delbœuf on the Curative Effects of, (T. Whittaker) xiii. 148.

Hypotheses, The Use of, (J. Venn) iii. 43; The Place of, in Experimental Science, (J. M. Rigg) xii. 549.

Hypothetical Syllogisms, (F. B. Tarbell) viii. 578.

Hyslop, J. H. (*a*) On Wundt's Theory of Psychic Synthesis in Vision, xiii. 499; Helmholtz's theory of Space-perception, xvi. 54. (*b*) "On some Facts of Binocular Vision," xiv. 393.

I

Idealisation, Knowledge as, (J. Dewey) xii. 382.

Idealism in Kant, The Question of, (J. H. Stirling) viii. 525.

Identity, The philosophical importance of a true Theory of, (B. Bosanquet) xiii. 356.

"Idiopsychological Ethics," (H. Sidgwick) xii. 31.

Idiosyncrasy, (G. Allen) viii. 487.

'If,' The Logic of, (Editor) ii. 264.

Illusions, La Rectification des, par l'appel aux Sens, (A. Binet) ix. 206.

"Illusory Psychology," (J. Dewey) xii. 83, (S. H. Hodgson) 314.

Imagery, Statistics of Mental, (F. Galton) v. 301.

Immortal Soul, The Undying Germ-plasm and the, (R. v. Lendenfeld) xvi. 92.

Impersonal Propositions, (J. Venn) xiii. 413.

Individualism and State-action, (T. Whittaker) xiii. 52.

Inductive Reasoning, The Aim of, (J. Solomon) xiii. 85; Inductive Thought, The Evolution of, (H. M. Stanley) xv. 382; The Principle of, (L. T. Hobhouse) xvi. 80; And Deduction, (L. T. Hobhouse) 507.

Infant, Biographical Sketch of an, (C. Darwin) ii. 285; Notes on an, (F. H. Champneys) vi. 104.
Infinite, Conceivability and the, (G. S. Fullerton) xi. 186.
Innervation and Consciousness, Central, (W. Wundt) i. 161.
Insanity, Daniel on Contagion of, i. 272.
Instinctive Action, Definition of, (J. Sully) vi. 114.
Introspection, Illusions of, (J. Sully) vi. 1.
Introspective Investigation, An, (H. Travis) ii. 22.
Introspective Psychology, On some Omissions of, (W. James) ix. 1.
Intuition, Definition of, (W. L. Davidson) vii. 304; And Inference, (D. G. Thompson) iii. 339, 468.
Ireland, W. W., *The Blot upon the Brain*, xi. 126; *Through the Ivory Gate*, xv. 133.
Italy, Philosophy in, (G. Barzellotti) iii. 505.

J

Jackson, H., *Fifth Book of the Nicomachean Ethics of Aristotle*, (J. A. Stewart) iv. 284.
Jackson, J. Hughlings, *Clinical and Physiological Researches on the Nervious System*, (Editor) i. 125; On Morbid Affections of Speech, (J. Sully) v. 105; *Croonian Lectures of*, (C. Mercier) ix. 474.
Jacob, Major, *A Manual of Hindu Pantheism*, vii. 149.
Jacobs, J. (*a*) The Need of a Society for Experimental Psychology, xi. 49; Experiments on "Prehension," xii. 75. (*c*) See H. Ebbinghaus, A. Binet.
Jacoby, P., *Études sur la Sélection*, vi. 597.
Jaesche, E., *Das Grundgesetz der Wissenschaft*, xi. 136; *Werden, Sein u. Erscheinungsweise des Bewusstseins*, xiii. 307.
Jahnius, A., *Gregorii Palamae Prosopopœia*, x. 150.
James H., *The Literary Remains of the late*, x. 304.
James, W. (*a*) Are we Automata? iv. 1; The Sentiment of Rationality, 317; On some Hegelisms, vii. 186; On Some Omissions of Introspective Psychology, ix. 1; What is an Emotion? 188; On the Function of Cognition, x. 27; The Perception of Space, xii. 1, 183, 321, 516; The Psychology of Belief, xiv. 321. (*b*) The Feeling of Effort, v. 582; Sense of Dizziness in Deaf-Mutes, vi. 412; Absolutism and Empiricism, ix. 281; Note on Prof. Stumpf, xii. 318; "The Psychological Theory of Extension," xiv. 107; Congress of Physiological Psychology at Paris, 614.
James, W., *The Principles of Psychology*, xvi. 138, (J. Sully) 393.
Jamieson, G., *Profound Problems in Theology and Philosophy*, x. 467.
Janet, Paul, *Les Causes Finales*, (J. Sully) ii. 244, (tr.), iv. 139; *The Theory of Morals* (tr.), ix. 467; *Victor Cousin et son Œuvre*, xii. 141; *Histoire de la Science politique, &c.* (3me éd.), 142; *La Philosophie de Lamennais*, xv. 292.
Janet, Pierre, *L'Automatisme Psychologique*, xiv. 598, (Editor) xv. 120.
Janitsch, J., *Kant's Urtheile über Berkeley*, iv. 601.
Jarvis, S. E., *Rosmini, &c.*, xv. 136.
Jastrow, J. (*a*) Studies of Rhythm, (I.), xi. 55; The Perception of Space by Disparate Senses, 539.
Jastrow, J., *On Small Differences of Sensation*, xi. 128; *The Time-relations of Mental Phenomena*, xvi. 545.
Jencken, Dr., Death of, vi. 298.
Jerusalem, W., *Zur Reform des Unterrichtes in der phil. Propädeutik*, xii. 151; *Lehrbuch der empirischen Psychologie*, xiv. 153.
Jesuit Philosophy, Recent Revolutions in, xi. 449.
Jesuits, Philosophy among the, (F. Winterton) xii. 254.
Jevons, W. S. (*a*) 'Cram,' ii. 193. (*b*) Reply to Editor on J. S. Mill's Philosophy as tested by, iii. 284. (*c*) See F. Y. Edgeworth.
Jevons, W. S., Formal Logic of, (Editor) i. 206; *Logic* (primer), 434; His Criticism of Boole's Logic, (G. B. Halstead) iii. 134; J. S. Mill's Philosophy tested by, (Editor, A. Strachey) 141, 283, 287; *The Principles of Science* (2nd ed.), 148; On Mill's Experimental Methods, (R. Adamson) 415; *Studies in Deductive Logic*, v. 589, (R. Adamson) vi. 427; W. Schlötel on the Originality of, 450; Death of, vii. 609; *Letters and Journals of*, xi. 431; *Pure Logic and other Minor Works*, xv. 418, (C. Read) xvi. 106.
Jewish Mediæval Philosophy and Spinoza, (W. R. Sorley) v. 362.

Jewish Philosophy, Aristotle in, (I. Abrahams) xiii. 468.
Jodl, F., *Geschichte der Ethik in der neueren Philosophie* (I.), vii. 606, (W. R. Sorley) viii. 295, (II.), xiv. 299, (W. R. Sorley) 584.
Johnson, W. E. (*b*) On "Feeling as Indifference," xiii. 80. (*c*) See L. Johnstone, J. Venn, B. Bosanquet, R. F. Clarke, J. Rickaby, St. G. Stock.
Johnstone, L., *Introduction to the Study of Logic*, (W. E. Johnson) xiii. 109.
Joly, H., *L'Imagination*, iii. 428; *Le Crime*, xiv. 456.
Jones, E. E. C., *Elements of Logic*, xv. 289, (C. L. Franklin) 559.
Jones, H., *Browning as a Philosophical and Religious Teacher*, xvi. 418.
Jordan, F., *Anatomy and Physiology in Character*, xii. 298, xv. 582; *Body, Parentage and Character in History*, xvi. 421.
Jowett, B., *The Politics of Aristotle*, xi. 121, (A. Goodwin) 284.
Joyau, E., *De l'Invention dans les Arts, &c.*, v. 295; *La Liberté morale*, xiv. 147; *La Théorie de la Grâce, &c.*, xv. 426.
Jungmann, J., *Das Gemüth u. das Gefühlsvermögen der neueren Psychologie*, x. 623.

K

Kaines, J., *Positivism*, vi. 292.
Kaler, E., *Die Ethik des Utilitarismus*, xi. 294.
Kalisch, M. M., *Path and Goal*, v. 293.
Kannengiesser, P., *Dogmatismus und Skepticismus*, ii. 582.
Kant, I., His Space and Modern Mathematics, (J. P. N. Land) ii. 38; His Analytic and Synthetic Judgments, (S. H. Hodgson) 118; The so-called Idealism of, (H. Sidgwick, E. Caird) iv. 408, 557; His "Refutation of Idealism," (H. Sidgwick, E. Caird) v. 111, 115; *Critique of Practical Reason, &c.* (tr. Abbott), 149; The Method of, (J. Watson) 528; A Criticism of his Philosophy, (H. Sidgwick) viii. 69, 393; H. Sidgwick on his Philosophy, (R. Adamson) 251, 424; His Theory of Mathematics, (W. H. S. Monck) 255, 576; His View of Mathematical Premisses and Reasonings, (H. Sidgwick) 421, 577; The Question of Idealism in, (J. H. Stirling) 525; *Prolegomena and Metaphys. Foundations of Natural Science* (tr. Bax), 617; Going back to, (G. J. Stokes) ix. 274; Has not answered Hume, (J. H. Stirling) 531, x. 45; *Introduction to Logic, &c.* (tr. Abbott), xi. 121; *The Philosophy of Law* (tr.), xii. 301; His conception of Free-will, (H. Sidgwick) xiii. 405; *Critique de la Raison Pratique* (tr. Picavet), 616; *Lose Blätter aus K's Nachlass*, xiv. 299; *Vorlesungen über Psychologie*, 300; *K.d.r.V.* (ed. E. Adickes), xv. 144; Schopenhauer's criticism of, (W. Caldwell) xvi. 355; *Principles of Politics* (tr. Hastie), 545; *Principes Métaph. de la Science de la Nature* (tr.), 547.
Kay, D., *Memory, &c.*, xiii. 288.
Keary, C. F. (*a*) The Homeric Words for 'Soul,' vi. 471.
Keary, C. F., *Primitive Belief among the Indo-European Races*, vii. 450.
Kedney, J. S., *The Beautiful and the Sublime*, vi. 294; *Hegel's Æsthetics*, x. 469.
Keibel, M., *Werth u. Ursprung der phil. Transcendenz*, xii. 149.
Keller, The blind-deaf-mute Helen, (Editor) xiv. 305.
Kellogg, S. H., *The Light of Asia and the Light of the World*, x. 611.
Keynes, J. N. (*a*) On the Position of Formal Logic, iv. 362. (*b*) "Matter of Fact" Logic, iv. 120. (*c*) See P. K. Ráy.
Keynes, J. N., *Studies and Exercises in Formal Logic*, (J. Venn) ix. 301, (2nd ed.) xii. 614; *The Scope and Method of Political Economy*, xvi. 286, (C. Read) 408.
Kirchner, F., *Katechismus der Psychologie*, ix. 318, (tr. Drought) xiii. 291; *Katechismus der Geschichte der Philosophie*, x. 476; *Wörterbuch der phil. Grundbegriffe*, xi. 588.
Kirkman, T. P., *Philosophy without Assumptions*, i. 295.
Klencke, Dr., *Schopenhauer u. Spinoza*, vii. 454.
Knauer, V., *Grundlinien zur Aristotelisch-Thomistischen Psychologie*, x. 623.
Knight, W. (*c*) See J. Caird.
Knight, W., *Studies in Philosophy and Literature*, iv. 597; *Hume*, xii. 135, (G. F. Stout) 443.
Knowledge, And Belief, (D. G. Thompson) ii. 309; Can a man sin against? (F. H. Bradley) ix. 286; The Object of, (E. Montgomery) 349; As Idealisation, (J. Dewey) xii. 382.

Koeber, R., *Schopenhauer's Erlösungslehre*, vi. 447; *Ist E. Haeckel Materialist?* xii. 479; *Die Phil. Schopenhauer's*, xiii. 462.
Koegel, F., *Lotze's Aesthetik*, xi. 595.
Koenig, E., *Die Entwickelung des Causalproblems, &c.*, xiv. 154, xv. 428, (T. Whittaker) xvi. 126.
Koerber, F., On Bain's doctrine of Mental Reproduction, xii. 485.
Köstlin, K., *Geschichte der Ethik* (I. 1), xii. 632.
Krause, A., *Das nachgelassene Werk Kant's, &c.*, xiv. 151.
Krause, A. F., *Gesetze des menschlichen Herzens*, i. 575.
Krause, K. C. F., *Vorlesungen über Ästhetik*, vii. 314; *Abriss des Systemes der Philos.*, xi. 594; *Grundr. der Gesch. der Philosophie*, xii. 309.
Kreibig, J., *Epikur*, xi. 444.
Kries, J. v., *Die Principien der Wahrscheinlichkeitsrechnung*, xi. 595.
Kroman, K., *Unsere Naturerkenntniss* (übers.), ix. 160; *Kurzgefasste Logik u. Psychologie*, xv. 579.
Kröner, E., *Das körperliche Gefühl*, xii. 308.
Kussmaul, A., *Les Troubles de la Parole* (tr.), x. 144.

L

L., B. L., *Matter and Energy*, xii. 616.
Laas, E., *Kant's Analogien der Erfahrung*, ii. 133; Death of, xi. 303.
Labanca, B., *Il Cristianesimo primitivo*, xi. 588; *Della Religione e della Filosofia Cristiana*, xiii. 460.
Labriola, A., *I Problemi della Filosofia della Storia*, xii. 628.
Lacy, W. M., *The Philosophy of the Unknowable*, ix. 317.
Ladd, G. T. (*b*) Dr. Cattell on *Elements of Physiological Psychology*, xiii. 308; On Body and Mind, 627.
Ladd, G. T., *Elements of Physiological Psychology*, xii. 465, (J. McK. Cattell) 583; On Body and Mind, (G. F. Stout) xiii. 467; *Introduction to Philosophy*, (J. Seth) xvi. 271; *Outlines of Physiological Psychology*, 284.
Land, J. P. N. (*a*) Kant's Space and Modern Mathematics, ii. 38; Philosophy in the Dutch Universities, iii. 87; Arnold Geulincx and his Works, xvi. 223. (*c*) See B. Erdmann, B. Spruyt, F. Pollock.
Land, J. P. N., and Others, *Spinoza* (tr.), viii. 135; *Inleiding tot de Wijsbegeerte*, xvi. 435.
Lang, A. (*a*) F. Max Müller and Fetishism, iv. 453.
Lang, A., *Custom and Myth*, x. 141; *Myth, Ritual and Religion*, xiii. 125.
Lange, C., *Ueber Gemüthsbewegungen* (üb. Kurella), xiii. 304.
Lange, F. A., Death of, i. 156; *Logische Studien*, ii. 278, (J. A. Stewart) iii. 112; *History of Materialism* (tr., I.-III.), ii. 431, v. 294, vi. 595, (A. Seth) vii. 124.
Lange, L., *Die gesch. Entwicklung des Bewegungsbegriffes, &c.*, xii. 151.
Language, H. Taine on the Acquisition of, by Children, ii. 252; An Infant's progress in, (F. Pollock) iii. 392; Thought and, (G. F. Stout) xvi. 181.
Lankester, E. R., *Degeneration*, v. 437.
Lanzky, P., *Abendröte*, xii. 630.
Lasswitz, K., *Gesch. der Atomistik vom Mittelalter bis Newton*, xv. 432.
Last, E., *Die realistische u. die idealistische Weltanschauung*, x. 153.
Laura Bridgman, S. G. Howe on the Education of, i. 263; (G. S. Hall) iv. 149; "A Second," xiii. 314; Death of, xiv. 472.
Lauret, H., *Philosophie de Stuart Mill*, xi. 440.
Law, The Definition of Natural, (N. Pearson) xi. 563.
Lazarus, M., *Das Leben der Seele* (2te Aufl., I.-III.), i. 297, iii. 291, vii. 313, (H. M. Baynes) 593; *Ueber die Reize des Spiels*, ix. 471, (J. Sully) x. 132; *Ideale Fragen* (3te Aufl.), xi. 297; *Treu u. Frei*, xiii. 140.
Lea, H. C., *Superstition and Force*, iv. 290.
Lecky, W. E. H., *European Morals* (3rd ed.), ii. 275.
Leclair, A. v., *Der Realismus der modernen Naturwissenschaft*, v. 298.
Le Conte, J., *Sight*, vi. 439; *Evolution and its relation to Religious Thought*, xiii. 610.
Lee, A. B. (*c*) See H. Ginsberg, T. Camerer.
Lefèvre, A., *Philosophy: Historical and Critical* (tr.), iv. 288.
Lehmann, A., *Die Hypnose, &c.*, xvi. 295, (G. F. Stout) 412.
Lehmann, E., *Die Schopenhauer'sche Willenslehre*, xiv. 459.
Lehmann, K., und E. Bleuler, *Zwangsmässige Lichtempfindungen*, vi. 297.
Leibniz, G. W., *Die Philos. Schriften von* (ed. G. J. Gerhart, I.), i. 156; And Hobbes, (Editor) xiii. 312; *The Philosophical Works of* (tr. G. M. Duncan), xvi. 291; And Spinoza, Prof. L. Stein on, (Editor) 443.

Leigh, A., *The Story of Philosophy*, vi. 147.
Leipsic, The Psychological Laboratory at, (J. McK. Cattell) xiii. 37.
Leland, C. G., *Practical Education*, xiii. 289.
Lemoigne, A., e F. Lussana, *Fisiologia dei Centri Nervosi Encefalici*, (G. H. Lewes) i. 122.
Lendenfeld, R. v. (*a*) The Undying Germ-plasm and the Immortal Soul, xvi. 92.
Leopardi, G., *Essays and Dialogues* (tr.), vii. 311.
Lescher, F. W., *The Scholastic Idea of the Universal*, xiv. 453.
Letourneau, C., *L'Evolution de la Morale*, xii. 140.
Levi, G., *La Dottrina dello Stato di Hegel*, xi. 292.
Levin, T. W. (*c*) See G. L. Turner.
Levin, T. W., *Notes on Inductive Logic* (I.), x. 301.
Levy, J. H. (*b*) Mill's Propositions and Inferences of mere Existence, x. 417.
Lewes, G. H. (*a*) What is Sensation? i. 157; Consciousness and Unconsciousness, ii. 156. (*b*) The Uniformity of Nature, i. 283. (*c*) See F. Lussana e A. Lemoigne.
Lewes, G. H., On the Postulates of Experience, (A. Bain) i. 146; His doctrine of Sensibility, (E. Hamilton) iv. 256; *The Physical Basis of Mind*, ii. 278, 430, (Editor) iii. 24; Death of, iv. 146; *The Study of Psychology*, 443; *Problems of Life and Mind* (3rd Series—2-4), v. 151; The Posthumous Volumes of, (C. Read) vi. 483.
Lewis, W. B., *A Text-book of Mental Diseases*, xv. 418, (W. L. Mackenzie) 551.
Liard, L., *La Science positive et la Métaphysique*, iv. 291; *Descartes*, vii. 153; *Des Définitions Géométriques et des Définitions Empiriques*, xiii. 137.
Lichtenberger, F., *Hist. of German Theolog. in 19th Cent.* (tr. W. Hastie), xiv. 451.
Liebmann, O., *Zur Analysis der Wirklichkeit*, i. 441.
Life, E. Pflüger on the Teleological Mechanics of, iii. 264; The Substantiality of, (E. Montgomery) vi. 321; And Mechanism, (J. S. Haldane) ix. 27.
Lilienfeld, P. v., *Die Socialwissenschaft der Zukunft* (I.-IV.), iii. 152, v. 298.
Lilly, W. S., *On Right and Wrong*, xv. 416.
Lindner, G. A., *Empirical Psychology* (tr.), xvi. 289.
Lindsay, T. M. (*a*) Hermann Lotze, i. 363; Recent Hegelian Contributions to English Philosophy, ii. 476.
Lindsay, W. L., *Mind in the Lower Animals*, v. 147.
Lingard, J. T. (*b*) W. B. Carpenter's Theory of Attention, ii. 272; The Rule of Three in Metaphysics, iii. 571. (*c*) See H. Calderwood.
Lioy, D., *The Philosophy of Right* (tr. Hastie), xvi. 421.
Lipps, T. (*b*) On his *Grundtatsachen des Seelenlebens*, xi. 146.
Lipps, T., *Die Grundtatsachen des Seelenlebens*, x. 154, (T. Whittaker) 605; with Reply, xi. 146; *Psychologische Studien*, x. 621.
Littré, E., On Mde. Comte, ii. 281; Death of, vi. 449.
Locke, J., *Some Thoughts concerning Education* (eds. Quick, Daniel), v. 438; *Conduct of the Understanding* (ed. Fowler), vi. 293.
Lockhart, W., *Life of Antonio Rosmini Serbati*, xii. 134, 297.
Loewy, T., *Common Sensibles*, ix. 317; *Die Vorstellung des Dinges auf Grund der Erfahrung*, xiii. 138.
Logeman, W. S. See Strong, H. A.
Logic, and the Elements of Geometry, (Editor) i. 147, iii. 564, (T. A. Hirst) 564; Fundamental, (J. J. Murphy) ii. 47; On some Principles of, (C. Read) 336; The Negative Character of, (A. Sidgwick) iii. 350; The Difficulties of Material, (J. Venn) iv. 35; "Matter of Fact," (J. N. Keynes) 120; Theoretical and Practical, (A. Sidgwick) 122; On the Position of Formal, (J. N. Keynes) 362; On some Fundamental Problems in, (M. Martin) viii. 183; Some proposed Reforms in common, (C. L. Franklin) xv. 75.
Logic, Thoughts on, (R. Adamson) iii. 124; On *Elements of*, (T. K. Abbott) ix. 163; On *Studies in*, (O. H. Mitchell, J. Venn) 321, 322.
Lombroso, C., *L'Homme Criminel*, xiii. 450; *L'Anthropologie Criminelle*, xv. 424.
London, Philosophy in, (Editor) i. 531.
Loomans, C., *De la Connaissance de Soi-même*, vi. 295.
Lotsij, M. C. L., *Spinoza's Wijsbegeerte*, (F. Pollock) iv. 431; *Het Vraagstuk van den zedelijken Vooruitgang*, xi. 596.

Lotze, H., (T. M. Lindsay) i. 363; *Metaphysik*, iv. 293, (2te Aufl.) x. 151, (tr.) ix. 465, (R. Adamson) x. 573; Death of, iv. 602; *Logik*, (2te Aufl.) vi. 446, (tr.) ix. 465, (R. Adamson) x. 100; *Grundzüge der Psychologie*, vii. 154, (3te Aufl.) x. 151, (tr.) xii. 469; *Gr. der practischen Philosophie*, vii. 452, (2te Aufl.) ix. 470, (tr.) xi. 127; *Gr. der Religionsphilosophie*, vii. 607, (tr.) x. 470; *Gesch. der deutschen Philosophie seit Kant*, viii. 142; *Gr. der Naturphilosophie*, 309; *Gr. der Logik u. Encycl. der Philosophie*, 458, (tr.) xii. 469; *Gr. der Metaphysik*, viii. 620, (tr.) x. 470; *Gr. der Æsthetik*, ix. 470, (tr.) xii. 469; *Microscosmus* (tr.), x. 610, (3rd ed.) xv. 148; *Kleine Schriften*, (I.) xi. 139, (II.) xii. 149; Moral Idealism of, (G. Santayana) xv. 191.

Lowndes, M. E. (*b*) Motor Objects and the Presentation-continuum, xiv. 402. (*c*) See F. Paulhan.

Lowndes, R., *René Descartes*, iv. 138.

Lowrey, C. E., *The Philosophy of Ralph Cudworth*, x. 470.

Lubbock, J., *Ants, Bees and Wasps*, vii. 601; *On the Senses, Instincts, &c., of Animals*, xiv. 141.

Ludwig, G., *Tertullian's Ethik*, x. 623.

Lukas, F., *Die Methode der Eintheilung bei Platon*, xiv. 154.

Lussana, F., e A. Lemoigne, *Fisiologia dei Centri Nervosi Encefalici*, (G. H. Lewes) i. 122.

Luthe, W., *Die Erkenntnisslehre der Stoiker*, xv. 429.

Luys, J., *The Brain and its Functions*, vii. 150.

Lyman, H. M., *Insomnia*, xi. 288.

Lyon, G., *L'Idéalisme en Angleterre au XVIIIe Siècle*, (T. Whittaker) xiii. 604.

M

MacAlister, D. (*c*) See J. B. Stallo.

McColl, H. (*a*) Symbolical Reasoning, v. 45.

M'Cosh, J. (*b*) Elements involved in Emotions, ii. 413; The Office of Induction in Fundamental Philosophy, xvi. 159.

M'Cosh, J., *The Emotions*, v. 290; "Philosophic Series," x. 143, 468, xi. 287; *Psychology: The Cognitive Powers*, 586; *Realistic Philosophy*, xii. 466; *Psychology: The Motive Powers*, 612; Retirement of, xiii. 150; *First and Fundamental Truths*, xiv. 315, (C. Read) xv. 100; *The Prevailing Types of Philosophy*, xvi. 286.

Macdonald, J. M. (*a*) The Science of History, x. 363.

Macfarlane, A., *Principles of the Algebra of Logic*, iv. 443, (J. Venn) 580.

Macgregor, D. (*b*) Reflex Effects of Extempore Speaking, vi. 546.

Mach, E., *Beiträge zur Analyse der Empfindungen*, xi. 593.

Mach, F. J., *Die Willensfreiheit des Menschen*, xii. 631, (T. Whittaker) xiii. 112.

McKendrick, J. G. Physiological Reports, i. 132, 268, 409.

Mackenzie, J. S. (*b*) On Psychology and Metaphysic, xvi. 259.

Mackenzie, J. S., *An Introduction to Social Philosophy*, xv. 568, (S. Alexander) xvi. 114.

Mackenzie, W. L. (*b*) Recent Discussion on the Muscular Sense, xii. 429; Prof. B. Sanderson on Physiological Method, xv. 245. (*c*) See W. B. Lewis, C. Mercier, D. Ferrier.

McLennan, J. F., *Studies in Ancient History*, ii. 132, (new ed.) xii. 133; Death of, iv. 451.

Macmillan, M., *The Promotion of General Happiness*, xv. 290.

M'Murry, F., *H. Spencer's Erziehungslehre*, xvi. 149.

M'Taggart, W. B., *Absolute Relativism* (I.), xii. 618.

Macvicar, J. G. (*a*) The so-called Antinomy of Reason, ii. 186.

Macvicar, J. G., *On the Nature of Things*, iii. 580; Death of, ix. 475.

Magnus, H., *Die geschichtliche Entwickelung des Farbensinnes*, and *Die Entwickelung des Farbensinnes*, iii. 151.

Maguire, T., *Lectures on Philosophy*, xi. 285.

Mahaffy, J. P. (*b*) Anticipation of Mill's Theory of Syllogism by Locke, i. 287.

Mahaffy, J. P., *Descartes*, vi. 146; On Dr. Jencken, 298; *Greek Life and Thought, &c.*, xiii. 126; *Kant's Critical Philosophy, &c.*, xiv. 594.

Maher, M., *Psychology*, xv. 568.

Maimonides and Spinoza, (K. Pearson) viii. 338.

Main, A. (*b*) Mr. Hodgson on G. H. Lewes's view of Philosophy, i. 292; The Automatic Theory of Animal Activity, 431; The Uniformity of Nature, 566; Mr. Hodgson on 'Cogito ergo sum,' ii.

126; Some questionable Propositions in Ferrier's *Institutes*, 402. (*c*) See F. Bouillier.
Mainländer, P., *Philosophie der Erlösung*, xi. 302, (T. Whittaker) 419.
Maitland, F. W. (*a*) H. Spencer's Theory of Society, viii. 354, 506. (*b*) The Relation of Punishment to Temptation, v. 259. (*c*) See A. J. Balfour.
Malevolence, Is there such a thing as Pure? (F. H. Bradley, A. Bain) viii. 415, 562.
Mamiani, T., Death of, x. 407.
Man, Can there be a Natural Science of? (T. H. Green) vii. 1, 161, 321.
Man: Fragments of Forgotten History, x. 301.
Manacéine, M., *Le Surmenage Mental, &c.*, xv. 423.
Mantegazza, P., *La Physionomie et l'Expression des Sentiments*, x. 145; *Physiognomy and Expression*, xv. 289; *Die Physiologie des Hasses*, 430.
Marbach, F., *Psychologie des Firm. Lactantius*, xv. 429.
Marcus Aurelius and the Stoic Philosophy, (F. Pollock) iv. 47.
Marenholtz-Bülow, Baroness, *Child and Child Nature* (tr.), v. 149.
Marion, H., *De la Solidarité Morale*, (F. Pollock) vii. 142.
Marique, J. M. L., *Des Centres Psychomoteurs du Cerveau*, x. 616.
Marshall, A., *Principles of Economics*, I., (W. R. Sorley) xvi. 110.
Marshall, H. R. (*a*) The Classification of Pleasure and Pain, xiv. 511; The Physical Basis of Pleasure and Pain, xvi. 327, 470. (*b*) "What is an Emotion?" ix. 615; Prof. O. N. Rood on Colour Contrast, xiv. 312.
Martensen, H. L., *Jacob Böhme*, xi. 126.
Martin, A., *L'Education du Caractère*, xii. 624.
Martin, M. (*a*) On Some Fundamental Problems in Logic, viii. 183. (*b*) E. Gurney on the Utilitarian 'Ought,' vii. 554.
Martinak, E., *John Locke's Lehre von den Vorstellungen*, xiii. 142.
Martineau, J. (*b*) H. Sidgwick on *Types of Ethical Theory*, x. 628, xi. 145.
Martineau, J., *A Study of Spinoza*, (F. Pollock) viii. 104; *Types of Ethical Theory*, x. 298, (H. Sidgwick) 426, (2nd ed.) xii. 133; And the Theory of Vocation, (H. Rashdall) xiii. 208; *A Study of Religion*, 283, (R. Flint) 590, (2nd ed.) xv. 147 *The Seat of Authority in Religion*, 418; *Essays, Reviews and Addresses*, xvi. 285, 544.
Marty, A., *Die geschichtliche Entwickelung des Farbensinnes*, v. 298.
Masaryk, T. G., *Versuch einer concreten Logik*, xii. 306.
Masci, F., *Psicologia del Comico*, xiv. 602.
Mason, F. A. (*b*) On "Feeling as Indifference," xiii. 253.
Masson, D., *Recent British Philosophy* (3rd ed.), ii. 579.
Masson, J., *The Atomic Theory of Lucretius*, x. 139.
Materialism Ancient and Modern, vi. 443.
Maude, J. E., *The Foundations of Ethics*, xii. 470.
Maudsley, H. (*a*) The Physical Conditions of Consciousness, xii. 489; The Double Brain, xiv. 161; The Cerebral Cortex and its Work, xv. 161. (*b*) Alleged Suicide of a Dog, iv. 410.
Maudsley, H., *The Physiology of Mind*, i. 435, (Editor) ii. 235; *The Pathology of Mind*, iv. 439; *Body and Will*, viii. 461, (G. F. Stout) ix. 135; *Natural Causes and Supernatural Seemings*, xi. 434.
Maus, I., *De la Justice pénale*, xvi. 427.
Maxwell, J. Clerk, On the Relativity of Motion, (J. K. Thacher) iv. 262.
Mayer, G., *Heraklit von Ephesus u. A. Schopenhauer*, xi. 595.
Mayer, V., *Thomas Hobbes*, ix. 471.
Mayor, J. B., What is the good of Moral Philosophy? v. 441; *M. T. Ciceronis De Natura Deorum* (I.), 585; *A Sketch of Ancient Philosophy from Thales to Cicero*, vi. 595, (W. Wallace) vii. 286.
Mayr, R., *Die philosophische Geschichtsauffassung der Neuzeit*, ii. 432.
Means, D. McG. (*b*) Nominalism, iv. 541; The Ethical Method of Evolution, v. 396.
Meinong, A. (*b*) Modern Nominalism, iv. 124.
Meinong, A., *Hume-Studien* (I.), (Editor) iii. 386; (II.), viii. 308, (T. Whittaker) 606; *Ueber philosophische Wissenschaft*, x. 624.
Mejdell, G. T., *Independence*, xv. 581.
Memory and 'Telepathy,' Hallucination of, (J. Royce) xiii. 244, (E. Gurney) 415.
Menger, C., *Ueber die Methode der Socialwissenschaften*, viii. 459.

Mental Activity, (E. Montgomery) xiv. 488.
Mental Elaboration, (J. Sully) xv. 469.
Mental Tests and Measurements, (J. McK. Cattell) xv. 373.
Mercier, C. (*a*) A Classification of Feelings, ix. 325, 509, x. 1. (*b*) H. Spencer's Classification of Cognitions, viii. 260; J. Hughlings Jackson's *Croonian Lectures*, ix. 474.
Mercier, C., His Classification of Feelings, (C. Read) xi. 76; *The Nervous System and the Mind*, (T. Whittaker) xiii. 263; *Sanity and Insanity*, (W. L. Mackenzie) xv. 551.
Merten, O., *Éléments de Philosophie populaire*, i. 441.
Merz, J. T., *Leibniz*, ix. 316, (W. R. Sorley) 439.
Metaphysics, "A new Departure in," (J. B. Gibson) vi. 542; The Rule of Three in, (J. T. Lingard) iii. 571; Psychology and, (J. S. Mackenzie) xvi. 259.
Metz, A., *Ueber Wesen u. Wirkung der Tragödie*, xi. 446.
Meyer, G. H. de, *Les Organes de la Parole* (tr.), x. 146.
Meyer, J. B., *Probleme der Lebensweisheit* (2te Aufl.), xii. 634.
Meyer, T., *Institutiones Juris naturalis*, xi. 299.
Meyer, W. A., *Hypatia v. Alexandria*, xi. 448.
Michaëlis, T., *Ueber Kant's Zahlbegriff* and *Stuart Mill's Zahlbegriff*, xiii. 619.
Michaut, N., *De l'Imagination*, ii. 580.
Michelet, C. L., *Wahrheit aus meinem Leben*, x. 478; *On Hegel's Philosophy of Art* (tr.), xi. 437.
Mill, James, Life of, (A. Bain) i. 97, 509, ii. 519.
Mill, J. S., Life of, (A. Bain) iv. 211, 375, 520, v. 82; Locke's Anticipation of his Theory of Syllogism, (J. P. Mahaffy, C. J. Monro) i. 287, 560; His Theory of the Syllogism, (A. Bain) iii. 137; His Philosophy tested by W. S. Jevons, (Editor, A. Strachey, W. S. Jevons) 141, 283-7; W. S. Jevons on his Experimental Methods, (R. Adamson) 415; In C. Fox's *Journals*, vii. 318; His Propositions and Inferences of mere Existence, (J. H. Levy) x. 417; An Alleged Gap in his Utilitarianism, (J. Sutherland) xi. 597; His Doctrine of Natural Kinds, (W. H. S. Monck) xii. 637, (F. and C. L. Franklin) xiii. 83.
Miller, J., *Metaphysics*, i. 440.
Miller, W. G., *Lectures on the Philosophy of Law*, ix. 316, (F. Pollock) 447.
Milnes, A., *Elementary Notions of Logic*, v. 438.
Miloslavsky, P., *Tipui sovremennoi filosofskoi muisli v Germanii*, iv. 143.
Minchin, G. M., *Naturae Veritas*, xii. 467.
Mind, Physical Basis of, (Editor) iii. 24; History of the Word, (J. Earle) vi. 301; And Reality, (J. Royce) vii. 30; And Body, (A. Bain) viii. 402; As a Social Factor, (L. F. Ward) ix. 563.
Mind-Stuff, The Doctrine of, (F. W. Frankland) vi. 116; And Reality, (J. Royce) 365; From the Historical Point of View, (T. Whittaker) 498.
Mitchell, O. H. (*b*) On *Studies in Logic*, ix. 321.
Mitchell, W. (*a*) Moral Obligation, xi. 35; The Logic of the Ethic of Evolution, xv. 342.
Mivart, St. G., *Nature and Thought*, (J. B. Gibson) viii. 284; *A Philosophical Catechism*, x. 142; *On Truth*, xiv. 287, (S. Alexander) 420; *The Origin of Human Reason*, xv. 288.
Mokievsky, P. V. (*b*) Philosophy in Russia, xv. 155.
Moll, A., *Hypnotism*, xv. 571.
Monck, W. H. S. (*a*) Philosophy at Dublin, i. 382; Butler's Ethical System, iii. 358. (*b*) Observations on Cases of Couching for Cataract, vii. 107; The Two Schools of Psychology, 427; Kant's Theory of Mathematics, viii. 255, 576; Mill's doctrine of Natural Kinds, xii. 637. (*c*) See T. K. Abbott, *Scottish Metaphysics reconstructed*.
Monck, W. H. S., *An Introduction to Logic*, (R. Adamson) v. 563; *Sir William Hamilton*, vi. 289.
Monism, (E. Gurney) vi. 153.
Monro, C. J. (*b*) Locke's Alleged Anticipation of Mill's theory of Syllogism, i. 560. (*c*) See J. Venn.
Monro, C. J., Death of, viii. 150.
Montgomery, E. (*a*) The Dependence of Quality on Specific Energies, v. 1; The Unity of the Organic Individual, 318, 365; The Substantiality of Life, vi. 321; Causation and its Organic Conditions, vii. 209, 381, 514; The Object of Knowledge, ix. 349; Space and Touch, x. 227, 377, 512; Mental Activity, xiv. 488. (*b*) Are we "Cell-Aggregates"? vii. 100; "The Psychological Theory of Extension," xiii. 579.

Moral Action, The Final Aim of, (S. Coit) xi. 324.
Moral Obligation, (W. Mitchell) xi. 35.
Morale à l'usage des Écoles primaires, Petit Traité de, iv. 291.
Morality, The Evolution of, (J. Seth) xiv. 27.
Morell, J. D., *Philosophical Fragments*, iv. 138; *Introduction to Mental Philosophy* (2nd ed.), ix. 609; *Manual of History of Philosophy*, x. 142; Death of, xvi. 448.
Morgan, C. Ll. (*a*) On the Study of Animal Intelligence, xi. 174. (*b*) The Generalisations of Science, xii. 88. (*c*) See E. Gurney.
Morgan, C. Ll., *The Springs of Conduct*, xi. 125; On the Study of Animal Intelligence, (G. J. Romanes) 454; *Animal Life and Intelligence*, xvi. 140, (G. J. Romanes) 262.
Morison, J. C., *The Service of Man*, xii. 297.
Morris, C., *The Aryan Race*, xiii. 612.
Morris, G. S., *Kant's Critique of Pure Reason*, vii. 604; *Hegel's Philosophy of the State and of History*, xiii. 296, (D. G. Ritchie) 432; Death of, xiv. 471.
Morselli, H. (E.), *Suicide*, vii. 151; *Scienza e Religione*, xi. 131; *Dello Spazio in rapporto col Sentimento dello Sforzo*, 442; *La Filosofia Monistica in Italia*, xii. 474; *Della Suggestione*, xvi. 146.
Mosso, A., *La Paura*, x. 619, (French tr.) xi. 440.
Motives, And Impulses of the Mind, (J. Copner) vii. 443; The Action of so-called, (Editor) 567.
Motor Sensations on the Skin, (G. S. Hall, H. H. Donaldson) x. 557; Objects and the Presentation-Continuum, (M. E. Lowndes) xiv. 402.
Mott, F. T., *Corona*, xiv. 292.
Müller, F. A., *Das Problem der Continuität, &c.*, xii. 307.
Müller, F. M. (*a*) The Original Intention of Collective and Abstract Terms, i. 345.
Müller, F. M., *Kant's Critique of Pure Reason* (tr.), (R. Adamson) vii. 277; *The Science of Thought*, xii. 299, (Editor) xiii. 94; *Biographies of Words, &c.*, 286; *Lectures on the Science of Thought*, xiv. 146; *Natural Religion*, 568; *Physical Religion*, xvi. 288.
Müller, G. E., *Zur Grundlegung der Psychophysik*, iii. 430; *Ueber die Vergleichung gehobener Gewichte*, xiv. 459.
Münsterberg, H., *Die Willenshandlung*, xiii. 463; *Der Ursprung der Sittlichkeit*, xiv. 298; *Beiträge zur experimentellen Psychologie*, 607, xv. 147, 297; On Apperception, (Editor) 234; On 'Muscular Sense' and 'Time-Sense,' (Editor) 524; And Experimental Psychology, (E. B. Titchener) xvi. 521; *Ueber Aufgaben u. Methoden der Psychologie*, 551.
Münz, W., *Die Grundlagen der Kant'schen Erkenntnisstheorie*, viii. 142.
Murphy, J. J. (*a*) Fundamental Logic, ii. 47. (*b*) Space through Sight and Touch, i. 284.
Murphy, J. J., *Habit and Intelligence*, (G. Allen) iv. 274.
Murray, J. C., *A Handbook of Psychology*, x. 611, (R. Adamson) xi. 252; *Solomon Maimon* (tr.), xiii. 448.
Muscular Perception of Space, The, (G. S. Hall) iii. 433; Muscular Sense, Recent Discussion on the, (W. L. Mackenzie) xii. 429; 'Muscular Sense' and 'Time-Sense,' (Editor) xv. 524.
Music, The Psychology of, (E. Gurney) vii. 89; The Origin of, (H. Spencer) xv. 449, (R. Wallaschek) xvi. 375, (J. McK. Cattell) 386, (H. Spencer) 585.
Myers, F. W. H. (*b*) On a case of alleged Hypnotic Hyperacuity of Vision, xii. 154.
Myers, F. W. H., *Phantasms of the Living*, xii. 135. See Gurney, E.

N

Naden, C. C. W., *Induction and Deduction*, xv. 570.
Nahlowsky, J. W., *Das Gefühlsleben* (2te Aufl.), x. 152; *Allgemeine Ethik*, xi. 141, (W. R. Sorley) 426.
Nakashima, R., *Kant's doctrine of the "Thing-in-itself,"* xiv. 596.
Natge, H., *Ueber Bacons Formenlehre*, xvi. 550.
Natorp, P., *Einleitung in die Psychologie, &c.*, xiv. 148.
Natural Kinds, On the Doctrine of, (M. H. Towry) xii. 434; Mill's Doctrine of, (W. H. S. Monck) 637, (F. and C. L. Franklin) xiii. 83.
Natural Law, The Definition of, (N. Pearson) xi. 563.
Natural Religion, (E. Gurney) viii. 198.
Naville, A., *De la Classification des Sciences*, xiii. 613.
Naville, E., *La Logique de l'Hypothèse*, v. 294; *La Physique Moderne*, viii. 457.

Necessary Connexion and Inductive Reasoning, (W. G. Davies) iii. 417.
Necessary Truth, On some Kinds of, (L. Stephen) xiv. 50, 188.
Neiglick, H., *Zur Psychophysik des Lichtsinnes*, xii. 635.
Neo-Scholasticism, The Lesson of, (F. Winterton) xiii. 383.
Nettleship, R. (*c*) See R. D. Archer-Hind.
Neudecker, G., *Grundlegung der reinen Logik*, viii. 141.
Newman, W. L., *The Politics of Aristotle*, xiii. 283, (A. W. Benn) xiv. 405.
Nichol, J., *Francis Bacon*, (I.) xiii. 608, (II.) xiv. 449.
Nisbet, J. F., *The Insanity of Genius, &c.*, xvi. 540.
Nitzsch, F. A. B., *Lehrb. der evang. Dogmatik*, xiv. 461.
Nivelet, F., *Gall et sa Doctrine*, xv. 425.
Noel, R. (*b*) The Postulates of Experience, i. 426.
Noire, L., *Max Müller and the Philosophy of Language*, iv. 442; *Logos*, xi. 133; Death of, xiv. 471.
Nominalism, (D. McG. Means) iv. 541; Modern, (A. Meinong) 124.
Note-Deafness, (G. Allen, E. Simcox) iii. 157, 401, 403.
Notovitch, O. K., *La Liberté de la Volonté*, xiii. 456.
Nourrisson, *Philosophies de la Nature*, xii. 623.

O

Obersteiner, H., *Anatomy of the Central Nervous System* (tr. A. Hill), xv. 418.
Ogereau, F., *Essai sur le Système philosophique des Stoïciens*, xi. 128.
Olcott, H. S., *Theosophy, Religion and Occult Science*, x. 464.
Oldenberg, H., *Buddha: His Life, his Doctrine, his Order* (tr.), viii. 137.
Oliphant, L., *Sympneumata*, x. 301; *Scientific Religion*, xiii. 609.
Ölzelt-Newin, A., *Die Grenzen des Glaubens*, xi. 136; *Ueber Phantasie-Vorstellungen*, xiv. 606.
Optic Thalami, J. Crichton-Browne on the Functions of the, i. 412.
Orange, H. W. (*a*) Berkeley as a Moral Philosopher, xv. 514.
Organic Individual, The Unity of the, (E. Montgomery) v. 318, 465.
Origin and Validity, (D. G. Ritchie) xiii. 63.
'Ought,' The Utilitarian, (E. Gurney, M. Martin) vii. 349, 554, viii. 101.
Oughter Lonie, A. C. (*b*) The Genesis of Primitive Thought, iii. 126.
Oughter Lonie, A. C., Death of, iii. 129.
Owen, J., *Evenings with the Skeptics*, (J. B. Gibson, with Reply) viii. 305, 462.
Oxford, Philosophy at, (M. Pattison) i. 82.

P

Pain, Gratification derived from the Infliction of, (J. Sully, A. Bain) i. 285, 429; And Death, (G. Allen) v. 201.
Panizza, M., *La Fisiologia del Sistema Nervoso*, (2a ed.) vi. 296, (3a ed.) xiii. 457.
Pantheism, General Sketch of the History of, iii. 580, v. 152.
Paoli, A., *Dei Concetti direttivi di J. S. Mill*, iii. 429.
Pappenheim, E., *Der angeb. Heraklitismus des Skeptikers Ainesidemos*, xiv. 605.
Paradoxical Philosophy, iv. 136.
Paszkowski, W., *Die Bedeut. d. theol. Vorstellungen f. d. Ethik*, xvi. 549.
Patanjali, *Yoga Aphorisms* (tr.), viii. 619.
Pater, W., *Marius the Epicurean*, (A. Goodwin) x. 442.
Pattison, M. (*a*) Philosophy at Oxford, i. 82.
Pattison, M., *Sermons*, xi. 123.
Paulhan, F., *La Physiologie de l'Esprit*, v. 296; *Les Phénomènes affectifs, &c.*, xii. 303; *L'Activité mentale*, xiv. 456, (M. E. Lowndes) 579; *Le nouveau Mysticisme*, xvi. 547.
Paulsen, F., *Entwicklungsgeschichte der Kantischen Erkenntnisstheorie*, i. 155; *Geschichte des gelehrten Unterrichts in Deutschland*, x. 312; *System der Ethik*, xiv. 300, (W. Wallace) 440.
Payne, J., *Lectures on the Science and Art of Education*, v. 583.
Payne, J. F. (*a*) James Hinton, i. 247.
Payne, W. H., *Contributions to the Science of Education*, xii. 137.
Pearson, K. (*a*) Maimonides and Spinoza, viii. 338; Meister Eckehart the Mystic, xi. 20.
Pearson, K., *The Ethic of Freethought*, xiii. 294.
Pearson, N. (*b*) Perfection as an Ethical End, v. 573; The Sense of Sin and Evolution, vii. 544; The Definition of Natural Law, xi. 563.

Peirce, C. S. (*b*) Logical Contraposition and Conversion, i. 424.
Peirce, C. S., and Others, *Studies in Logic*, (J. Venn) viii. 594; *On Small Differences of Sensation*, xi. 128.
Penjon, A., *Étude sur G. Berkeley*, iv. 292.
Perception, (T. Davidson) vii. 496.
Perez, B., *Les trois premières Années de l'Enfant*, (F. Pollock) iii. 546, (2me éd.) vii. 605, (tr.) x. 613; *L'Éducation dès le Berceau*, vi. 149, (F. Pollock) 281; *Thierri Tiedemann et la Science de l'Enfant*, vii. 153; *L'Enfant de trois à sept Ans*, xi. 587, (J. Sully) xii. 282; *L'Education morale dès le Berceau*, xiii. 301; *L'Art et la Poésie de l'Enfant*, 613.
Perfection as an Ethical End, (T. Thornely) v. 350, (N. Pearson) 573.
Perrin, R. S., *The Religion of Philosophy*, x. 614.
Pesch, T., *Institutiones Philosophiæ Naturalis*, (T. Davidson, H. Parkinson) vii. 424, viii. 144, 147.
Pessimism, (O. Plumacher) iv. 68.
Peters, F. H., *The Nicomachean Ethics of Aristotle*, (J. A. Stewart) vi. 433.
Pfisterer, G., *Pädagogische Psychologie*, (J. Sully) vi. 142.
Pfleiderer, E., *Die Philosophie des Heraklit, &c.*, xii. 305; *Zur Lösung der Platonischen Frage*, xiii. 464.
Pfleiderer, O., *Religionsphilosophie auf geschichtlicher Grundlage*, (S. Alexander) x. 285, (tr.) xi. 587, xii. 616, xiii. 611, xiv. 145; *The Development of Theology, &c.*, xvi. 141, (E. Caird) 405.
Phaedo, On Plato's, (D. G. Ritchie) xi. 353.
Philosophical Criticism, Essays in, (by A. Seth, R. B. Haldane, and Others) viii. 135, (R. Hodgson) 580.
Philosophical Development, (A. C. Fraser) xv. 1.
Philosophic Doubt, (L. Stephen) v. 157.
Philosophical Journals, Reports on, (R. Flint, J. Sully, W. C. Coupland) i. 136, 273, 416, 555; Notes on Articles in, xiv.-xvi., each No.
Philosophical Society, The, x. 319, xii. 159.
Philosophical Terms, Four New, (W. Cyples) v. 390; Philosophic Term Phenomenon, The, (T. Case) xiv. 309.
Philosophisches Jahrbuch, xiv. 157.
Philosophy, And Science, (S. H. Hodgson) i. 67, 223, 351; In Education, (J. A. Stewart, Editor) iii. 225, 241; The Metaphysical Method in, (S. H. Hodgson) ix. 48; Separation of Questions in, (W. L. Davidson) 548; On the Conditions of a True, (S. H. Hodgson) xiii. 153; 'Library of,' 317; The Progress of, (J. Ward) xv. 213.
Philosophy and its Foundations, i. 439.
Physical Reality, The Genesis of the Cognition of, (G. F. Stout) xv. 22; (J. Pikler) 394; Dr. Pikler on, (G. F. Stout) 545.
Physicus, *A Candid Examination of Theism*, iii. 426.
Physiological Psychology, in Germany, (J. Sully) i. 20; The Congress of, at Paris, xiv. 471, (W. James) 614, xvi. 157.
Picavet, F., Condillac's *Traité des Sensations* (I.), xi. 303; *L'Histoire de la Philosophie, ce qu'elle a été, &c.*, xiv. 147; *Les Idéologues*, xvi. 425.
Piderit, Th., *La Mimique et la Physiognomonie* (tr.), xiii. 455.
Pikler, J. (*b*) "The Genesis of the Cognition of Physical Reality," xv. 394.
Pikler, J., *The Psychology of the Belief in Objective Existence*, xv. 571, (Editor) xvi. 100.
Pillon, F., Introduction to Hume's *Treatise of Human Nature*, in French, (Editor) iii. 384; *L'Année philosophique* (i.), xvi. 425.
Piper, P., *Die Schriften Notkers u. seiner Schule* (I. 1), viii. 309.
Pitch, Lucae on Accommodation of Ear to, i. 135.
Pleasure, Pain, Desire and Volition, On, (F. H. Bradley) xiii. 1.
Pleasure and Pain, The Classification of, (H. R. Marshall) xiv. 511; Relation of Feeling to, (H. M. Stanley) 537; The Physical Basis of, (H. R. Marshall) xvi. 327, 470.
Plumacher, O. (*a*) Pessimism, iv. 68.
Plumacher, O., *Der Kampf um's Unbewusste*, vii. 453; *Der Pessimismus*, ix. 613.
Pluzanski, E., *Essai sur la Philosophie de Duns Scot*, xiii. 138.
Podmore, F., *Phantasms of the Living*, xii. 135. See Gurney, E.
Poëy, A., *Le Positivisme*, i. 297.
Political Economy as a Moral Science, (W. Cunningham, D. Syme) iii. 369, iv. 147.

Pollock, F. (*a*) Evolution and Ethics, i. 334; Notes on the Philosophy of Spinoza, iii. 195; Marcus Aurelius and the Stoic Philosophy, iv. 47. (*b*) The Uniformity of Nature, i. 425; Happiness or Welfare, ii. 269; An Infant's Progress in Language, iii. 392. (*c*) See B. Perez, M. C. L. Lotsij, M. Guyau, F. Schultze, H. Marion, Spinoza, J. Martineau, W. G. Miller.

Pollock, F., *Spinoza: His Life and Philosophy*, v. 440, (J. P. N. Land) vi. 131; *Essays in Jurisprudence and Ethics*, vii. 449; *Introduction to the Hist. of the Science of Politics*, xv. 567.

Poole, R. L., *Illustrations of the History of Mediæval Thought*, x. 141.

Popper, J., *Die technischen Fortschritte, &c.*, xiv. 151.

Porter, N., *Science and Sentiment*, viii. 138; *The Elements of Moral Science*, x. 470; *Kant's Ethics*, xi. 439.

Poulton, E. B., *The Colours of Animals*, xv. 572.

Powell, J. W., *Report of the Bureau of Ethnology, Smithsonian Institution, 1879-80*, viii. 308.

Prantl, K. v., Death of, xiv. 313.

Prefatory Words, (Editor) i. 1.

"Prehension," Experiments on, (J. Jacobs) xii. 75; Supplementary Notes on, in Idiots, (F. Galton) 79.

Prel, C. du, *The Philosophy of Mysticism* (tr. C. C. Massey), xiv. 288; *Kant's Vorlesungen über Psychologie*, 300.

Preller, L. et H. Ritter, *Historia Philosophiae Graecae* (ed. 7a), xii. 310, xiv. 462.

Presentative and Representative Cognitions, (D. G. Thompson) iii. 270.

Preyer, W., *Die Seele des Kindes*, vii. 313, (J. Sully) 416, (tr. H. W. Brown) xiv. 454; *Éléments de Physiologie générale* (tr.), ix. 470; *Specielle Physiologie des Embryo*, x. 152; *Die Erklärung des Gedankenlesens*, xi. 139.

Primitive Thought, Genesis of, (A. C. Oughter Lonie) iii. 126.

Probability and Utility, The Method of Measuring, (F. Y. Edgeworth) xii. 484.

Progress, Habit and, (A. W. Benn) xi. 243.

Proof, Propositions with a view to, (A. Sidgwick) viii. 22.

Proposition, On the Forms of Logical, (J. Venn) v. 336.

Psychic Synthesis in Vision, On Wundt's Theory of, (J. H. Hyslop) xiii. 499.

Psychical Research, Proceedings of the Society for, viii. 151, 623, ix. 607, xi. 287, xii. 618, xiii. 150, 609, xiv. 292, xv. 160.

Psychological Principles, (J. Ward) viii. 153, 465, xii. 45.

Psychological Standpoint, The, (J. Dewey) xi. 1.

Psychology, A Science or a Method? (J. A. Stewart) i. 445; And Education, (C. H. Lake) 571; The Two Schools of, (W. H. S. Monck) vii. 427; And Philosophy, (Editor) viii. 1; As Philosophic Method, (J. Dewey) xi. 153; Illusory, (S. H. Hodgson) 478, xii. 314, (J. Dewey) 83; In Russia, xiv. 313; On Physiological Expression in, (A. Bain) xvi. 1; And Metaphysic, (J. S. Mackenzie) 259; The Problem of, (E. W. Scripture) 305.

Puchta, &c., *Outlines of the Science of Jurisprudence* (tr.), xiii. 130.

Pulszky, A., *The Theory of Law and Civil Society*, xiii. 294.

Punishment, The Relation of, to Temptation, (F. W. Maitland) v. 259.

Pünjer, B., *History of the Christian Philosophy of Religion* (tr. I.), xiii. 129.

Punnett, J. T. (*a*) Efficiency as a Proximate End in Morals, vi. 350; Ethical Alternatives, x. 85.

Putsage, J., *Etudes de Science réelle*, xiv. 293; *Nécessité sociale*, 601; *La Foi, la Force et la Raison*, xv. 291.

Q

Questioning Mania, O. Berger on, i. 413.

R

Rabier, É., *Leçons de Philosophie: I. Psychologie*, x. 305, *II. Logique*, xii. 145.

Rabus, L., *Grundriss der Gesch. der Philosophie*, xii. 477.

Radestock, P., *Schlaf und Traum*, (J. Sully) iv. 588; *Die Gewöhnung und ihre Wichtigkeit*, vii. 315; *Genie und Wahnsinn*, ix. 614.

Raffel, J., *Empirismus Locke's, Berkeley's u. Hume's, &c.*, xiii. 142.

Rashdall, H. (*a*) H. Sidgwick's Utilitarianism, x. 200; Dr. Martineau and the Theory of Vocation, xiii. 208. (*b*) Mr. W. L. Courtney on Bishop Butler, xi. 555. (*c*) See E. Beaussire, J. M. Wilson and T. Fowler.

Rationality, The Sentiment of, (W. James) iv. 317.
Rau, A., *Ludwig Feuerbach's Philosophie*, viii. 141.
Rauh, F., *Essai sur le Fondement métaphysique de la Morale*, xvi. 429.
Ravaisson, F., *La Philosophie en France au XIXe Siècle* (2me éd.), x. 617.
Ráy, P. K., *A Text-Book of Deductive Logic*, ix. 467, (J. N. Keynes) 587.
Rayleigh, Lord. (*b*) On Mr. Venn's Explanation of a Gambling Paradox, ii. 409, (with Reply) 578.
Reaction-time and Attention in the Hypnotic State, (G. S. Hall) viii. 170.
Read, C. (*a*) On some Principles of Logic, ii. 336; Kuno Fischer on English Philosophy, iv. 346; S. H. Hodgson's Philosophy of Reflexion, v. 60; G. H. Lewes's Posthumous Volumes, vi. 483. (*b*) Mr. Sully on Pessimism, iii. 410; The Number of Terms in a Syllogism, iv. 116; The Mnemonic Lines of the Syllogism, vii. 440; On the English of "Ding-an-Sich," viii. 412; On Mr. Mercier's Classification of Feelings, xi. 76. (*c*) See F. Bowen, C. de Rémusat, E. v. Hartmann, A. Seth, B. P. Bowne, A. Barratt, J. Sully, G. v. Gizycki, J. Venn, J. M'Cosh, W. S. Jevons, J. N. Keynes.
Read, C., *On the Theory of Logic*, iii. 426, (J. Venn) 539.
Reality and Thought, (F. H. Bradley) xiii. 370.
Reason, The so-called Antinomy of, (J. G. Macvicar) ii. 186; Relations of, to Beauty, (E. Gurney) iv. 482; Definition of, (W. L. Davidson) vii. 558.
Rée, P., *Der Ursprung der moralischen Empfindungen*, ii. 581; *Die Entstehung des Gewissens*, x. 475; *Die Illusion der Willensfreiheit*, xi. 137.
Reed, E. A., *Hindu Literature*, xvi. 289.
Reflexion, The Philosophy of, (C. Read) v. 60.
Regeneration of Lost Parts in Animals, (D'A. W. Thompson) ix. 415.
Regnaud, P., *Origine et Philosophie du Langage*, xiii. 456.
Reich, E., *Studien über die Volksseele*, i. 297.
Reich, Em., *Schopenhauer als Philosoph der Tragödie*, xiv. 155.
Reichel, E., *Wer schrieb das "Novum Organum"?* xii. 477.
Reichlin-Meldegg, Prof. v., Death of, ii. 282.
Reicke, R., *Lose Blätter aus Kant's Nachlass*, xiv. 299.
Reid, J. S., *The Academics of Cicero*, v. 293; *M. Tulli Ciceronis Academica*, x. 460.
Relation, Feelings of, (R. Hodgson) x. 250.
Religionsphilosophie auf modern-wiss. Grundlage, xi. 590.
Remember forwards and not backwards, Why do we? (F. H. Bradley) xii. 579.
Rémusat, C. de, *Histoire de la Philosophie en Angleterre depuis Bacon jusqu' à Locke*, (C. Read) iv. 128.
Renan, E., *Dialogues et Fragments Philosophiques*, (Editor) iv. 132, (tr.) x. 614; *The Future of Science* (tr.), xvi. 287.
Renouf, P. le P., *The Religion of Ancient Egypt*, v. 584.
Renouvier, C., Philosophy of: Logic—Psychology, (S. H. Hodgson) vi. 31, 173; *Esquisse d'une Classification System. des Doctrines phil.*, xi. 288, (T. Whittaker) xii. 100.
Renton, W., *The Analytic Theory of Logic*, xiii. 293.
Responsibility, The Personal Aspect of, (L. S. Bevington) iv. 244.
Revell, W. F., *Ethical Forecasts*, xiii. 288.
Réville, A., *Prolegomena of the History of Religions* (tr.), x. 302.
Rhodes, E. H. (*a*) The Scientific Conception of the Measurement of Time, x. 347.
Rhythm, Studies of, (G. S. Hall, J. Jastrow) xi. 55.
Ribot, T. (*a*) Philosophy in France, ii. 366.
Ribot, T., *La Psychologie Allemande Contemporaine*, iv. 445, (2me éd.) x. 472, (tr.) xi. 439; *Les Maladies de la Mémoire*, vi. 296, (J. Sully) 590; *L'Hérédité Psychologique*, 2me éd., (G. Allen) vii. 413; *Les Maladies de la Volonté*, viii. 457, (J. Sully) ix. 141; *Les Maladies de la Personnalité*, x. 307, (J. Sully) xi. 106; Appointed Professor in the Collège de France, xiii. 318; *Psychologie de l'Attention*, xiv. 146, (J. Sully), 275, (tr.) xv. 298.
Ricardou, A., *De L'Idéal*, xvi. 292.
Richet, C., *L'Homme et l'Intelligence*, x. 145; *Essai de Psychologie générale*, xii. 619.

Rickaby, John, *First Principles of Knowledge*, xiv. 290, (W. E. Johnson) 425; *General Metaphysics*, xv. 568.
Rickaby, Joseph, *Moral Philosophy*, xiv. 140, (W. C. Coupland) 271.
Rickert, H., *Zur Lehre von der Definition*, xiv. 148.
Riddles of the Sphinx, xvi. 420, 538.
Riehl, A., *Der philosophische Kriticismus*, xii. 476; On "Philosophical Criticism," (R. Adamson) xiv. 66.
Rigg, J. M. (*a*) The place of Hypothesis in Experimental Science, xii. 549. (*b*) Notes on Aristotle's Psychology in relation to Modern Thought, xi. 85.
Ritchie, D. G. (*a*) On Plato's *Phaedo*, xi. 353; Origin and Validity, xiii. 63. (*c*) See R. Flint, W. Windelband, Hegel, A. Seth, G. S. Morris, J. Veitch.
Ritchie, D. G., *Darwinism and Politics*, xiv. 291.
Ritchie, E., *The Problem of Personality*, xv. 138.
Ritter, H. et L. Preller, *Historia Philosophiae Graecae* (ed. 7a), xii. 310, xiv. 462.
Rivalry of the Fields of Vision, Schön and Mosso on, i. 269.
Robertson, G. C. See Editor.
Robertson, G. C., *Hobbes*, xi. 120.
Roberty, E. de, *L'ancienne et la nouvelle Philosophie*, xii. 620; *L'Inconnaissable*, xiv. 456; *La Philosophie du Siècle*, xvi. 546.
Robinson, E. G., *Principles and Practice of Morality*, xiii. 450, (W. C. Coupland) xiv. 271.
Rod, E., *Le Sens de la Vie*, xiv. 296.
Roder, A., *Der Weg zum Glück*, xiv. 606.
Rogers, J. W. F., *Grammar and Logic in the 19th Century*, ix. 155.
Rohde, E., *Psyche*, xv. 430.
Rolph, W. H., *Biologische Probleme* (2te Aufl.), ix. 612, (T. Whittaker) x. 281.
Romanes, G. J. (*a*) Consciousness of Time, iii. 297. (*b*) T. Whittaker on *Mental Evolution in Animals*, ix. 473; C. Lloyd Morgan on the Study of Animal Intelligence, xi. 454. (*c*) See C. Ll. Morgan.
Romanes, G. J., On Evolution of Nerves and Nerve-systems, ii. 565; *Animal Intelligence*, vii. 318, 601, (tr. Franç. Perrier) xiii. 300; *Mental Evolution in Animals*, ix. 155, (T. Whittaker, with Reply) 291, 473; *Mental Evolution in Man*, (G. F. Stout) xiv. 261.
Romundt, H., *Grundlegung zur Reform der Philosophie*, x. 626; *Die Vollendung des Sokrates*, xi. 134; *Ein neuer Paulus*, 590; *Die drei Fragen Kants*, xiii. 141.
Rood, O. N., On Colour Contrast, xiv. 312.
Rosenkranz, J. K. F., Death of, iv. 603.
Rosenthal, L. A., *Die monistische Philosophie*, v. 588.
Rosmini Serbati, A., *The Origin of Ideas* (tr., I.-III.), viii. 306, x. 139, (J. B. Gibson) viii. 438, ix. 311, x. 271; *Psychology*, (tr., I.) x. 139, (II.) xi. 286, (III.) xiv. 142; Papal Condemnation of, xiii. 471, (F. Winterton) 622; *The Ruling Principle of Method applied to Education*, xv. 136.
Rosny, L. de, *La Méthode conscientielle*, xiii. 299.
Rothenbücher, A., *Handbuch der Moral*, ix. 612.
Royce, J. (*a*) "Mind-Stuff" and Reality, vi. 365; Mind and Reality, vii. 30. (*b*) Hallucination of Memory and 'Telepathy,' xiii. 244.
Royce, J., *Primer of Logical Analysis*, vii. 311; *The Religious Aspect of Philosophy*, x. 304, (S. Alexander) 599.
Rubinstein, S., *Psychologisch-ästhetische Essays*, ix. 614; *Aus der Innenwelt*, xiv. 299; *Zur Natur der Bewegungen*, xvi. 297.
Rümelin, G., *Reden und Aufsätze*, vi. 600.
Runze, G., *Sprache u. Religion*, xiv. 604.
Russia, Psychology in, xiv. 313; Philosophy in, (P. V. Mokievsky) xv. 155.
Ryland, F., *A Student's Handbook to Psychology and Ethics*, (R. Adamson) v. 562.

S

Saint-Hilaire, J. B., *De la Métaphysique*, iv. 446; *La Philosophie dans ses Rapports, &c.*, xiv. 599; *Etude sur F. Bacon*, xv. 573.
Salter, W. M., *Die Religion der Moral* (übers.), x. 622; *Ethical Religion*, xvi. 145.
Saltus, E., *The Anatomy of Negation*, xii. 139.
Sanderson, Prof. B., on Physiological Method, (W. L. Mackenzie) xv. 245.

Sanderval, O. de, *De l'Absolu*, xiii. 138.
Santayana, G. (*a*) Lotze's Moral Idealism, xv. 191.
Sarlo, F. de, *Studi sul Darwinismo*, and *I Sogni*, xii. 627.
Sayce, A. H., *Introduction to the Science of Language*, v. 291.
Scannell, T. B. (*b*) Conditional Propositions, vii. 442.
Schaafhausen, H., *Anthropologische Studien*, xi. 295.
Scheffler, H., *Die Naturgesetze* (I.-III.), vi. 447 ; *Die Theorie der Erkenntniss oder die Logischen Gesetze*, (J. Venn) 592.
Schellwien, R., *Das Gesetz der Causalität in der Natur*, ii. 134 ; *Der Wille, die Lebensgrundmacht* (I.), iv. 602 ; *Optische Häresien*, xi. 592, xiv. 153.
Schmid, A., *Erkenntnisslehre*, xvi. 147.
Schmidkunz, H., *Ueber die Abstraction*, and *Anal. u. Synthet. Phantasie*, xv. 428.
Schmidt, E. v., *Die Philosophie der Mythologie und Max Müller*, vi. 151 ; *Begriff u. Sitz der Seele*, xiii. 141.
Schmidt, O., *Die naturwissenschaftlichen Grundlagen der Philosophie des Unbewussten*, ii. 433.
Schmitt, E. H., *Das Geheimniss der Hegelschen Dialektik*, xiv. 154.
Schneider, G. H., *Der thierische Wille*, (J. Sully) v. 424 ; *Der menschliche Wille*, vii. 607, (J. Sully) viii. 126 ; *Freud und Leid des Menschengeschlechts*, ix. 160, (W. C. Coupland) 602.
Schneidewin, M., *Lichtstrahlen aus E. v. Hartmann's Werken*, vi. 601.
Schopenhauer, A., His Philosophy, (R. Adamson) i. 491 ; *The World as Will and Idea* (tr. I.), ix. 156 ; (II., III.), xi. 437 ; *Aphorismen zur Lebensweisheit*, u. *Ueber den Tod*, &c., 296 ; *On the Fourfold Root*, &c., and *On the Will in Nature*, (tr.) xiv. 144 ; *Religion*, &c., 596 ; *The Wisdom of Life* (tr.), xv. 421 ; *Counsels and Maxims* (tr.), 572 ; *Studies in Pessimism* (tr.), xvi. 141 ; Criticism of Kant, (W. Caldwell) 355 ; *The Art of Literature* (tr.), 420 ; *Werke* (Brasch), 434.
Schröder, E., *Der Operationskreis des Logikkalkuls*, (R. Adamson) iii. 252.
Schubert-Soldern, R. v., *Grundlagen einer Erkenntnisstheorie*, x. 310 ; *Grundlagen zu einer Ethik*, xii. 305 ; *Reproduction, Gefühl, Wille*, 631.
Schuchardt, H., *Ueber die Lautgesetze*, xi. 295.
Schultze, F., *Kant und Darwin*, i. 154 ; *Die Sprache des Kindes*, (F. Pollock) vi. 436.
Schumann, F., *Ueber die Vergleichung gehobener Gewichte*, xiv. 459.
Schuppe, W., *Grundzüge der Ethik und Rechtsphilosophie*, vii. 313.
Schurman, J. G., *Kantian Ethics and the Ethics of Evolution*, (T. Whittaker) vii. 137 ; *The Ethical Import of Darwinism*, xiii. 127 ; *Belief in God*, xvi. 143.
Schuyler, A., *Empirical and Rational Psychology*, viii. 139.
Schwegler, A., *Gesch. der Philosophie im Umriss* (14teAufl.), xii. 476.
Science, The Generalisations of, (C. Ll. Morgan) xii. 88.
Sciences, On the Classification of the, (H. M. Stanley) ix. 265.
Scientific Philosophy, (F. E. Abbot) vii. 461.
Scott, W. R., *Introduction to Cudworth's Treatise*, &c., xvi. 543.
Scottish Metaphysics reconstructed, &c., xii. 298, (W. H. S. Monck) 447.
Scottish Universities, Philosophy in the, (J. Veitch) ii. 74, 207.
Scotus Novanticus, *Metaphysica nova et vetusta*, ix. 466, (A. Seth) 574, (2nd ed.) xiv. 453 ; *Ethica, or the Ethics of Reason*, x. 298, (A. Seth) 594.
Scripture, E. W. (*a*) The Problem of Psychology, xvi. 305.
Scrymgour, E. P., *Perception and Conception*, &c., xiv. 453.
Séailles, G., *Essai sur le Génie dans l'Art*, ix. 469.
Secrétan, C., *Le Principe de la Morale*, x. 618 ; *La Civilisation et la Croyance*, xiii. 298 ; *Etudes Sociales*, xv. 141.
Seiffert, O., *Syllogismus u. Induktion*, xiv. 302.
Selby-Bigge, L. A. (*b*) Some Fundamental Ethical Controversies, xv. 93.
'Self,' On some current conceptions of the Term, (J. Dewey) xv. 58.
Self-Sacrifice, (F. H. Bradley) viii. 258.
Semicircular Canals and "Sense of Space," E. de Cyon on the, (Editor) iii. 559.
Sensation, What is? (G. H. Lewes) i. 157 ; Definition of, (W. L. Davidson) vi. 551 ; The Passage from Stimulus to, (E. Gurney) vii. 295.
Senses' in a Course of Psychology, 'The, (G. L. Turner) xiv. 550.
Sensory Nerves, Bloch on Rate of Current in, i. 132.

Sergi, G., *Teoria Fisiologica della Percezione*, vii. 154; *L'Origine dei Fenomeni psichici*, x. 474; *La Psychologie physiologique* (tr.), xiii. 136; *Le Degenerazioni umane*, xiv. 297; *Psicologia per le Scuole*, xvi. 147.
Serguéyeff, S., *Le Sommeil et le Système nerveux*, xvi. 292.
Setchénoff, I., *Etudes Psychologiques* (tr.), x. 306.
Seth, A. (*a*) Hegel: An Exposition and Criticism, vi. 513. (*b*) Hegel and his recent Critics, xiv. 116. (*c*) See E. Zeller, R. Adamson, F. A. Lange, J. H. Stirling, G. J. Stokes, Scotus Novanticus, T. H. Green, S. Alexander, E. Caird.
Seth, A., *The Development from Kant to Hegel*, vii. 310, (C. Read) 409; *Scottish Philosophy*, xi. 120, (Editor) 267, (2nd ed.) xv. 297; *Hegelianism and Personality*, xiii. 124, (D. G. Ritchie) 256.
Seth, J. (*a*) The Evolution of Morality, xiv. 27. (*c*) See B. Bosanquet, F. E. Abbot, A. Fouillée, G. T. Ladd.
Seth, J., *Freedom as Ethical Postulate*, xvi. 543.
Seyfarth, H., *Louis de la Forge, &c.*, xiii. 304.
Shand, A. F. (*a*) The Unity of Consciousness, xiii. 231; Space and Time, 339; The Antinomy of Thought, xv. 357; The Nature of Consciousness, xvi. 206.
Shields, C. W., *The Final Philosophy*, iii. 427; *Philosophia Ultima*, xv. 137.
Shoup, F. A., *Mechanism and Personality*, xvi. 425.
Shute, R., *A Discourse on Truth*, ii. 274, (Editor) 392; Death of, (J. A. Stewart) xii. 157; *On the History of the Aristotelian Writings*, xiii. 607.
Siciliani, P., *La nuova Biologia*, xi. 293.
Sidgwick, A. (*a*) The Negative Character of Logic, iii. 350; Definition *de Jure* and *de Facto*, iv. 230; The Localisation of Fallacy, vii. 55; Propositions with a view to Proof, viii. 22. (*b*) Theoretical and Practical Logic, iv. 122. (*c*) See J. Bergmann, W. Wundt, W. L. Davidson.
Sidgwick, A., *Fallacies*, viii. 621, (J. Venn) ix. 296.
Sidgwick, H. (*a*) The Theory of Evolution in its application to Practice, i. 52; Philosophy at Cambridge, 235; Hedonism and Ultimate Good, ii. 27; H. Spencer's Ethical System, v. 216; Incoherence of Empirical Philosophy, vii. 533; A Criticism of the Critical Philosophy, viii. 69, 313; Green's Ethics, ix. 169; The Historical Method, xi. 203; "Idiopsychological Ethics," xii. 31; Some Fundamental Ethical Conceptions, xiv. 473. (*b*) H. Calderwood on Intuitionism in Morals, i. 563; A. Barratt on 'The Suppression of Egoism,' ii. 411; The Establishment of Ethical First Principles, iv. 106; The so-called Idealism of Kant, 408; Kant's Refutation of Idealism, v. 111; On the Fundamental Doctrines of Descartes, vii. 435; Kant's View of Mathematical Premisses and Reasonings, viii. 421, 577; Dr. Martineau's Defence of *Types of Ethical Theory*, xi. 142; The Kantian Conception of Free Will, xiii. 405; Statistical Study of Hallucinations, xiv. 615. (*c*) See F. H. Bradley, J. Grote, M. Guyau, A. Fouillée, L. Stephen, T. Fowler, J. Martineau.
Sidgwick, H., *Methods of Ethics*, (A. Bain) i. 119, (2nd ed.) iii. 147, (3rd ed.) ix. 607, (4th ed.) xv. 581; On Intuitionalism, (H. Calderwood) i. 197; On *Ethical Studies*, (F. H. Bradley, with Reply) ii. 122, 125; On the Critical Philosophy, (R. Adamson, with Replies) viii. 251, 421, 577; Utilitarianism of, (H. Rashdall) x. 200; On *Progressive Morality*, (T. Fowler) 481; On *Types of Ethical Theory*, (J. Martineau) 628, with Reply, xi. 142; *Outlines of the History of Ethics for English Readers*, (W. Wallace) 570.
Siebeck, H., *Geschichte der Psychologie* (I. 1, 2), vi. 150, ix. 318, (Editor) x. 289; *Untersuchungen zur Philosophie der Griechen* (2te Aufl.), xiv. 149.
Sight and Smell in Vertebrates, (G. Allen) vi. 453.
Sigwart, C., *Logik* (II.), iv. 143, (J. Venn) 426; *Kleine Schriften*, vi. 600; *Vorfragen der Ethik*, xii. 477, (W. R. Sorley) xiii. 280; *Die Impersonalien*, 463; *Logik* (I., 2te Aufl.), xiv. 299; *Ein Collegium logicum im XVI. Jahrh.*, xv. 577.
Simar, H. T., *Die Lehre vom Wesen des Gewissens in der Scholastik des 13ten Jahrh.*, xi. 138.
Simcox, E. (*b*) Note-deafness, iii. 401.
Simcox, E., *Natural Law*, ii. 280, (R. Adamson) 552.
Simcox, G. A. (*a*) An Empirical Theory of Free-will, iv. 469.
Sime, J., *Lessing: his Life and Writings*, iii. 145.

Simon, Collyns, *Berkeley's Principles of Human Knowledge*, iv. 137; Death of, ix. 166.
Simon, D. W. (*c*) See J. Frohschammer.
Simon, J., *Victor Cousin*, xiii. 132.
Simonin, A. H., *Les Sentiments, les Passions et la Folie*, xi. 130.
Sin and Evolution, The Sense of, (N. Pearson) vii. 544.
Sinnett, A. P., *Esoteric Buddhism* (5th ed.), x. 613.
Sinnett, Mrs., *The Purpose of Theosophy*, x. 613.
Sizeranne, M. de la, *Les Aveugles par un Aveugle*, xiv. 296.
Sleep, Obersteiner on, i. 133; E. Pflüger on, 134; A. M. Langlois on, ii. 571; Contribution by A. Strümpell to the Theory of, iii. 263.
Smiley, C. W., *Altruism considered economically*, xiv. 146.
Smith, I. G., *Aristotelianism*, xv. 135.
Smirnova, A., *Istoria Angliiskoy Etikoy* (I.), (E. A. B. Hodgetts) vii. 316.
Société de Psychologie Physiologique, x. 639, xi. 302.
Society for Experimental Psychology, The need for a, (J. Jacobs) xi. 49.
Sollier, P., *Psychologie de l'Idiot et de l'Imbécile*, xvi. 427.
Solomon, J. (*b*) The Aim of Inductive Reasoning, xiii. 85; Is there an *a priori* knowledge? xv. 260.
Sommer, H., *Ueber das Wesen und die Bedeutung der menschlichen Freiheit*, (T. Whittaker) viii. 298.
Sommer, R., *Locke's Verhältniss zu Descartes*, xiii. 142.
Sorel, G., *Le Procès de Socrate*, xiv. 600.
Sorley, W. R. (*a*) Jewish Mediæval Philosophy and Spinoza, v. 362. (*c*) See F. Jodl, J. T. Merz, A. Fouillée, M. Guyau, J. W. Nahlowsky, C. Sigwart, J. Caird, A. Marshall.
Sorley, W. R., *On the Ethics of Naturalism*, x. 627, (T. Whittaker) xi. 262.
'Soul,' The Homeric Words for, (C. F. Keary) vi. 471.
Sound, Urbantschitsch on perception of very weak, i. 268.
Souriau, J., *L'Esthétique du Mouvement*, xiv. 455.
Space, Through Sight and Touch, (J. J. Murphy) i. 284; The Muscular Perception of, (G. S. Hall) iii. 433; Our Control of, and Time, (J. Venn) vi. 18; And Touch, (E. Montgomery) x. 227, 377, 512; The Perception of, by Disparate Senses, (J. Jastrow) xi. 539; The Perception of, (W. James) xii. 1, 183, 321, 516; And Time, (A. F. Shand) xiii. 339; Our Space-Consciousness, (H. Spencer) xv. 305; Mr. Spencer's derivation of, (J. Watson) 537; Helmholtz's theory of Space-perception, (J. H. Hyslop) xvi. 54.
Spalding, D. A., Death of, iii. 153.
Specific Energies, The Dependence of Quality on, (E. Montgomery) v. 1.
Speech, The Festal Origin of Human, (J. Donovan) xvi. 498.
Spencer, H. (*a*) The Comparative Psychology of Man, i. 7; Replies to Criticisms on *The Data of Ethics*, vi. 82; Our Space-Consciousness, xv. 305; The Origin of Music, 449. (*b*) E. B. Tylor on *The Principles of Sociology*, ii. 415; Consciousness under Chloroform, iii. 555; On the Origin of Music, xvi. 535.
Spencer, H., *Principles of Sociology*, (I., pts. 1-5) (A. Bain) i. 128, (I.) (E. B. Tylor) ii. 141, (3rd ed.) xi. 284; *Education* (new ed.), iv. 137; *The Data of Ethics*, 444, (A. Bain) 561; *Ceremonial Institutions*, v. 149; Ethical System of, (H. Sidgwick) 216; Another View of the Ethics of, (A. W. Benn) 489; New Appendix to *First Principles*, 591; Psychological 'Congruities' of, (A. Bain) vi. 266, 394; *Political Institutions*, vii. 448; His Classification of Cognitions, (C. Mercier) viii. 260; His Theory of Society, (F. W. Maitland) 354, 506; *Reasons for dissenting from the Philosophy of M. Comte* (2nd ed.), x. 159; "Further Illustrations of Primitive Thought," 639; *Ecclesiastical Institutions*, xi. 124; *Scienza e Religione* (tr.), 131; *The Factors of Organic Evolution*, xii. 293; *L'Individuo e lo Stato* (tr.), xiv. 602; His derivation of Space, (J. Watson) xv. 537; *Essays*, xvi. 418; *Justice*, 543.
Spinal Cord, E. Pflüger on Sensory Functions of the, iii. 268.
Spinoza, Notes on the Philosophy of, (F. Pollock) iii. 195; *Opera*, (F. Pollock) vii. 455, ix. 313; *Ethic* (tr. White), viii. 454; *Chief Works of* (tr.), (F. Pollock) ix. 313; Prof. L. Stein on Leibniz and, (Editor) xvi. 443.
Spir, A., *Denken und Wirklichkeit*, ii. 276; *Gesammelte Schriften*, xi. 297; *Esquisses de Philosophie critique*, xii. 471.
Spitta, H., *Einl. in die Psychologie als Wissensch.*, xi. 293; *Die psychol. Forschung, &c.*, xv. 147.

Spruyt, C. B., *Proeve van eene Geschiedenis van de Leer der Aangeboren Begrippen*, (J. P. N. Land) iv. 591.
Stadler, A., *Grundsätze der reinen Erkenntnisstheorie in der Kantischen Philosophie*, i. 297; *Kant's Theorie der Materie*, ix. 319.
Stählin, L., *Kant, Lotze and Ritschl* (tr.), xv. 134.
Stallo, J. B., *The Concepts and Theories of Modern Physics*, viii. 133, (D. MacAlister) 276.
Stanhope Demonstrator, The, (R. Harley) iv. 192.
Stanley, H. M. (*b*) On the Classification of the Sciences, ix. 265; Is the Design-Argument scientific? x. 420; Feeling and Emotion, xi. 66; Relation of Feeling to Pleasure and Pain, xiv. 537; The Evolution of Inductive Thought, xv. 382.
Stapley, A. M., *The Mechanism of Nature*, xii. 139.
Starcke, C. N., *The Primitive Family*, xiv. 450.
Stein, K. H. v., *Die Entstehung der neueren Æsthetik*, xii. 152.
Stein, L., *Die Willensfreiheit*, vii. 157; *Die Psychologie der Stoa*, xi. 594, xiii. 303; *Leibniz u. Spinoza*, xvi. 298, (Editor) 443.
Steinthal, H., *Der Ursprung der Sprache*, ii. 276, (4te Aufl.) xiii. 620; *Abriss der Sprachwissenschaft* (I.), vii. 453, (H. M. Baynes) ix. 144; *Allgemeine Ethik*, xi. 140, (S. Alexander) 275; *Gesch. d. Sprachw. bei den Griechen u. Römern, &c.*, xv. 576.
Stephen, L. (*a*) Philosophic Doubt, v. 157; On some kinds of Necessary Truth, xiv. 50, 188. (*b*) On the use of the word 'Speculatist,' iii. 294.
Stephen, L., *English Thought in the 18th Century*, ii. 130, (Editor) 352; *The Science of Ethics*, vii. 317, (H. Sidgwick) 572; On Utilitarianism, (F. Y. Edgeworth) 446; *Dictionary of National Biography* (I.), x. 298.
Stern, M. L., *Philosophischer u. naturwissenschaftlicher Monismus*, x. 477.
Sterrett, J. M., *Reason and Authority in Religion*, xvi. 290.
Steudel, A., *Ueber Materie u. Geist*, xi. 444.
Stevens, E. M. (*b*) First Notions of the Unseen in a Child, xi. 149.
Stevens, L. T. (*a*) On the Time-sense, xi. 393.
Stewart, A., *Our Temperaments*, xii. 131.
Stewart, J. A. (*a*) Psychology—a Science or a Method? i. 445; Philosophy in Education, iii. 225. (*b*) Richard Shute, xii. 157. (*c*) See J. Frauenstädt, F. A. Lange, H. Jackson, F. H. Peters.
Stirling, J. H. (*a*) The Question of Idealism in Kant: The Two Editions, viii. 525; Kant has *not* answered Hume, ix. 531, x. 45.
Stirling, J. H., *Text-Book to Kant*, vii. 152, (A. Seth) 268; *Of Philosophy in the Poets* and *The Community of Property*, x. 299; *Philosophy and Theology*, xvi. 137.
Stock, St. G., *Attempts at Truth*, viii. 136; *Deductive Logic*, xiv. 290, (W. E. Johnson) 425.
Stöckl, A., *Geschichte der neueren Philosophie*, ix. 158; *Handbook of the History of Philosophy* (tr. I.), xiii. 125.
Stoic Philosophy, M. Aurelius and the, (F. Pollock) iv. 47.
Stokes, G. J. (*b*) Going back to Kant ix. 274.
Stokes, G. J., *The Objectivity of Truth*, (A. Seth) ix. 443.
Stout, G. F. (*a*) The Herbartian Psychology, xiii. 321, 473; Herbart, the English Psychologists and Beneke, xiv. 1; The Psychological Work of Herbart's Disciples, 353; The Genesis of the Cognition of Physical Reality, xv. 22; Apperception and the Movement of Attention, xvi. 23; Thought and Language, 181; Belief, 449. (*b*) Prof. Ladd on Body and Mind, xiii. 467; Remarks on Mental Association, &c., xiv. 244; Dr. Pikler on the Cognition of Physical Reality, xv. 545. (*c*) See H. Maudsley, W. Knight, G. J. Romanes, A. Lehmann.
Strachan, J., *What is Play?* iii. 149.
Strachey, A. (*b*) J. S. Mill's Philosophy tested by W. S. Jevons, iii. 283.
Strasosky, H., *J. F. Fries, &c.*, xvi. 550.
Straszewsky, M., *Powstanie i Rozwój Pesymizmu w Indyach*, ix. 472.
Stricker, S., *Studien über das Bewusstsein*, iv. 293; *Studien über die Sprachvorstellungen*, v. 440; *Studien über die Association der Vorstellungen*, viii. 142; *Physiologie des Rechts*, x. 310; *Du Langage et de la Musique* (tr.), 472; *Ueber die wahren Ursachen*, xii. 633.
Strong, H. A., Logeman, W. S., Wheeler, B. J., *Introduction to the Study of the History of Language*, xvi. 283.

Strümpell, L., *Einleitung in die Philosophie*, xi. 295.
Stuckenberg, J. H. W., *The Life of Immanuel Kant*, vii. 603; *Introduction to the Study of Philosophy*, xiii. 449.
Studies in Logic (by C. S. Peirce and Others), viii. 456, (J. Venn, with Replies) 594, ix. 321.
Stumpf, C., *Tonpsychologie* (I.), ix. 161, (J. Sully, with Note in reply) 593, x. 158, (II.), xv. 576, (J. Sully) xvi. 274; *Musikpsychologie in England*, (J. Sully) xi. 580; On Place and Position, (W. James) xii. 318.
Subject and Object in Psychology, (S. H. Hodgson) xii. 423.
Subject-sciences, Definition and Demarcation of the, (A. Bain) xiii. 527.
Subjectivity in Philosophy, (S. H. Hodgson) viii. 92.
Sublime, The Origin of the, (G. Allen) iii. 324.
Suicide of a Dog, Alleged, (H. Maudsley) iv. 410.
Sully, J. (*a*) Physiological Psychology in Germany, i. 20; Art and Psychology, 467; The Question of Visual Perception in Germany, iii. 1, 167; Harmony of Colours, iv.172; Pleasure of Visual Form, v. 181; Illusions of Introspection, vi. 1; George Eliot's Art, 378; Versatility, vii. 366; Comparison, x. 489; Mental Elaboration, xv. 469. (*b*) The Gratification derived from the Infliction of Pain, i. 285; The Associationist Theory of Avarice, 567; The Laws of Dream-Fancy, ii. 111; J. Hughlings Jackson on Morbid Affections of Speech, v. 105; Mental Development in Children, 385; On the Definition of Instinctive Action, vi. 114; Horwicz on the Organic Sensations, vii. 302; On "Feeling as Indifference," xiii. 248. (*c*) See L. Dumont, G. T. Fechner, P. Janet, G. Allen, P. Radestock, W. Cyples, G. H. Schneider, G. Pfisterer, E. Gurney, E. v. Hartmann, T. Ribot, W. Preyer, C. Stumpf, M. Lazarus, G. Glogau, J. Delboeuf, B. Perez, H. Höffding, S. Bryant, M. Guyau, W. James.
Sully, J., *Pessimism*, ii. 279, (A. Bain) 558, (C. Read) iii. 410; On *Physiological Æsthetics*, (G. Allen) ii. 574; *Illusions*, vi. 298, (J. B. Gibson) 413; *Outlines of Psychology*, ix. 314, (R. Adamson) 427; *The Teacher's Handbook of Psychology*, xi. 433, (C. Read) 577.
Summum Bonum, The, (D. G. Thompson) vi. 62.
Sutherland, J. (*b*) An alleged Gap in Mill's Utilitarianism, xi. 597; On the Utilitarian Formula, xv. 590.
Swendenborgian view of the Problem of Philosophy, A, (W. Denovan) xiv. 216.
Syllogism, The Number of Terms in a, (C. Read) iv. 116; The Mnemonic Lines of the, (C. Read) vii. 440.
Symbolic Language, On the Nature and Functions of a Complete, (S. Bryant) xiii. 188.
Symbolical Reasoning, (H. McColl) v. 45.
Syme, D. (*b*) On W. Cunningham's "Political Economy as a Moral Science," iv. 147.
Syme, D., *On the Modification of Organisms*, xvi. 288.
Symmetry, The Origin of the Sense of, (G. Allen) iv. 301.
Sympathy and Interest, (F. H. Bradley) viii. 573.

T

Taine, H., On the Acquisition of Language by Children (tr.), ii. 252; *De l'Intelligence*, (3me, 4me éd.), iv. 290, ix. 470.
Tait, P. G., *Properties of Matter*, x. 466.
Tannery, P., *Pour l'Histoire de la Science Hellène*, xiii. 132.
Tarbell, F. B. (*b*) Hypothetical Syllogisms, viii. 578.
Tarde, G., *La Criminalité comparée*, xi. 587; *Les Lois de l'Imitation*, (T. Whittaker) xv. 404.
Taylor, H., *The Morality of Nations*, xiii. 287, (W. Wallace) 425.
Teichmüller, G., *Literarische Fehden im 4ten Jahrhundert vor Chr.*, x. 311, (A. Goodwin) xi. 117; *Religionsphilosophie*, xii. 306; Death of, xiii. 631; *Neue Grundleyung der Psychologie u. Logik*, xiv. 605.
'Telepathy,' Hallucination of Memory and, (J. Royce) xiii. 244, (E. Gurney) 415.
Temperature-Sense, On the, (H. H. Donaldson) x. 399; see also iv. 147, 298.
Temptation, The Relation of Punishment to, (F. W. Maitland) v. 259.
Terquem, A., *La Science romaine à l'Époque d'Auguste*, xi. 129.
Thacher, J. K. (*b*) J. Clerk Maxwell on the Relativity of Motion, iv. 262.

Theosophy, Five Years of, x. 613.
Things-in-themselves, On the Nature of, (W. K. Clifford) iii. 57.
Thomæ Aquinatis, *Opp. Omnia* (ed. Zigliara, I.), (T. Davidson) viii. 610.
Thomas, J., *Principes de Philosophie morale*, xv. 141.
Thomas, P. F., *La Philosophie de Gassendi*, xiv. 598.
Thompson, D. G. (*a*) Knowledge and Belief, ii. 309; Intuition and Inference, iii. 339, 468; The *Summum Bonum*, vi. 62. (*b*) Presentative and Representative Cognitions, iii. 270.
Thompson, D. G., *A System of Psychology*, (T. Whittaker) x. 115; *The Problem of Evil*, xii. 465; *The Religious Sentiments of the Human Mind*, xiii. 285; *Social Progress*, xiv. 289.
Thompson, D'A. W. (*b*) The Regeneration of Lost Parts in Animals, ix. 415.
Thomson, G., *Evolution and Involution*, v. 438, (with Reply, 590).
Thomson, J. A., *The Evolution of Sex*, xv. 134.
Thomson, J. R., *A Dictionary of Philosophy*, xii. 610.
Thornely, T. (*a*) Perfection as an Ethical End, v. 350.
Thought, and Feeling, On some alleged Distinctions between, (R. Flint) ii. 112; Association and Thought, (F. H. Bradley) xii. 354; Reality and Thought, (F. H. Bradley) xiii. 370; The Antinomy of, (A. F. Shand) xv. 357; And Language, (G. F. Stout) xvi. 181; Thought-relations, (A. Eastwood) 243.
Time, Consciousness of, (G. J. Romanes) iii. 297; The Scientific Conception of the Measurement of, (E. H. Rhodes) x. 347; The Time it takes to see and name objects, (J. M. Cattell) xi. 63; The Time taken up by Cerebral Operations, (J. M. Cattell) 220, 377, 524; On the Time-sense, (L. T. Stevens) 393; 'Time-sense' and 'Muscular Sense,' (Editor) xv. 524.
Tissié, P., *Les Rêves*, xv. 425.
Titchener, E. B. (*b*) Dr. Münsterberg and Experimental Psychology, xvi. 521.
Tobias, W., *Grenzen der Philosophie*, i. 155.
Tocco, F., *Le Opere Latine di G. Bruno*, xiv. 603.
Tönnies, F., On Hobbes, v. 155, ix. 618, xii. 483; *Gemeinschaft u. Gesellschaft*, xiii. 143, (H. W. Blunt) 439; *Hobbes's Elements of Law* and *Behemoth*, (Editor) xiv. 429.
Towry, M. H. (*b*) On the Doctrine of Natural Kinds, xii. 434.
Trance, G. M. Beard on, ii. 568.
Transcendentalism, (A. J. Balfour) iii. 480; A. J. Balfour on, (E. Caird, with Reply) iv. 111; J. Watson on, (A. J. Balfour) vi. 260.
Transposition of Traces of Experience, (T. Le M. Douse) iii. 132.
Travis, H. (*a*) An Introspective Investigation, ii. 22.
Troglodyte, A, *Riddles of the Sphinx*, xvi. 420, 538.
Tuke, D. H., *Insanity in Ancient and Modern Life*, iii. 427; *Sleep-walking and Hypnotism*, ix. 466.
Tulloch, J., *Modern Theories of Philosophy and Religion*, ix. 609; *Movements of Religious Thought in Britain during the 19th Century*, xi. 122.
Turbiglio, S., *Le Antitesi tra il Medioevo e l'Età moderna nella Storia della Filosofia*, (R. Flint) iii. 549.
Türck, H., *Hamlet ein Genie*, xiv. 155; *Das psychol. Problem in der Hamlet-Tragödie*, xv. 296.
Turner, G. L. (*b*) 'The Senses' in a course of Psychology, xiv. 550.
Turner, G. L., *Wish and Will*, vi. 148, (T. W. Levin) 424.
Tylor, E. B. (*a*) H. Spencer's *Principles of Sociology* (I.), ii. 141. (*b*) Reply to H. Spencer, 419.
Tylor, E. B., *Anthropology*, vi. 438; New Method in Anthropology, xiv. 310.

U

Uchronie, i. 437.
Ueberweg, F., *Grundriss der Gesch. der Phil.*, (6te Aufl., M. Heinze) x. 147, (7te Aufl.) xi. 588, xiii. 619.
Ulrici, H., *Gott und die Natur*, i. 154; On Spiritism, iv. 415, 603; Death of, ix. 324.
Uniformity of Nature, The, (G. H. Lewes) i. 283, (F. Pollock) 425, (A. Main) 566.
Unilateral Phenomena of Mental and Nervous Disorders, A. Robertson on, i. 413.
United States, Philosophy in the, (G. S. Hall) iv. 89.
Uphues, G. K., *Wahrnehmung u. Empfindung, Ueber die Erinnerung*, (T. Whittaker) xiv. 590.

Utilitarian 'Ought,' The, (E. Gurney) vii. 349 ; Mr. Gurney on the, (M. Martin, with Reply) 554, viii. 101; Formula, On the, (J. Sutherland) xv. 590.
Utility, The Method of Measuring Probability and, (F. Y. Edgeworth) xii. 484.

V

Vaccaro, M. A., *Genesi e Funzione delle Leggi penali*, xiv. 297.
Vacherot, E., *Le nouveau Spiritualisme*, x. 304.
Vaihinger, H., *Hartmann, Dühring und Lange*, i. 574 ; *Commentar zu Kant's K.d.r.V.* (I. 1, 2), vi. 599, vii. 606, (W. Wallace) viii. 440 ; *Naturforschung u. Schule*, xiv. 301.
Valedictory, (Editor) xvi. 557.
Vander Haeghen. See Haeghen.
Van der Wijck. See Wijck.
Vanni, I., *Un Programma critico di Sociologia*, xiv. 298; *Della Filosofia del Diritto, &c.*, xv. 575.
Veitch, J. (*a*) Philosophy in the Scottish Universities, ii. 74, 207.
Veitch, J., *The Method, Meditations, &c., of Descartes* (6th ed.), v. 152, (W. L. Davidson) 428 ; *Hamilton*, viii. 135, (W. L. Davidson) 289 ; *Sir William Hamilton*, 456 ; *Institutes of Logic*, xi. 120 ; *Knowing and Being*, xiv. 450, (D. G. Ritchie) 574.
Velzen, H. T. van, *Ueber die Geistesfreiheit vulgo Willensfreiheit*, xii. 152.
Venn, J. (*a*) Consistency and Real Inference, i. 43 ; Boole's Logical System, 479 ; The Use of Hypotheses, iii. 43 ; The Difficulties of Material Logic, iv. 35 ; On the Forms of Logical Proposition, v. 336 ; Our Control of Space and Time, vi. 18. (*b*) Lord Rayleigh on a Gambling Paradox, ii. 578 ; Reply to O. H. Mitchell on *Studies in Logic*, ix. 322 ; Impersonal Propositions, xiii. 413; On some Facts of Binocular Vision, xiv. 251. (*c*) See C. Read, C. Sigwart, A. Macfarlane, H. Schefler, *Studies in Logic*, A. Sidgwick, J. N. Keynes, W. Wundt, F. Galton.
Venn, J., *Logic of Chance* (2nd ed.), i. 434, (3rd ed.), (W. E. Johnson) xiii. 268 ; On the Explanation of a Gambling Paradox, (Lord Rayleigh, with Reply) ii. 409, 578 ; *Symbolic Logic*, vi. 298, (C. J. Monro) 574 ; *The Principles of Empirical or Inductive Logic*, xiv. 314, (C. Read) 565.
Véra, A., *Philosophie de la Religion de Hegel* (tr.), (W. Cunningham) i. 549 ; Death of, x. 639.
Verdon, R. (*a*) Forgetfulness, ii. 437.
Vere, Aubrey de, *Proteus and Amadeus*, iii. 580.
Vernial, P., *Origine de l'Homme*, vi. 597.
Versatility, (J. Sully) vii. 366.
Vertigo, of Direction, (A. Binet, B. Bosanquet) x. 156, 317.
Viguier, C., On the Sense of Direction, (Editor) vii. 571.
Vision, On Wundt's Theory of Psychic Synthesis in, (J. H. Hyslop) xiii. 499.
Visual Perception in Germany, The Question of, (J. Sully) iii. 1, 167.
Visual Form, Pleasure of, (J. Sully) v. 181.
Visual Space-perceptions in the Dark, (W. H. S. Monck) ix. 617.
Vocation, Dr. Martineau and the Theory of, (H. Rashdall) xiii. 208.
Vogt, J. G., *Die Geistesthätigkeit des Menschen, &c.*, xii. 634 ; *Das Wesen der Elektrizität, &c.* (I.), xvi. 435.
Volition, Notes on, (A. Bain) xvi. 253.
Volkelt, J., *Immanuel Kant's Erkenntnisstheorie*, (R. Adamson) v. 145 ; *Erfahrung u. Denken*, xi. 294, (R. Adamson) xii. 122.
Volkmann, W., *Lehrbuch der Psychologie* (2te Aufl.), i. 153, (3te Aufl., I.-II.), x. 146, 476 ; Death of, ii. 283 ; Psychology of, (T. Whittaker) xv. 325, 489.
Voltz, H., *Die Ethik als Wissenschaft, &c.*, xii. 149.
Vorbrodt, G., *Ethik u. Religionsphilosophie Lotze's*, xvi. 551.

W

Wahle, R., *Gehirn und Bewusstsein*, x. 151.
Wake, C. S., *The Evolution of Morality*, iii. 290.
Waldstein, C., *The Balance of Emotion and Intellect*, iii. 581, iv. 287.
Wallace, A. R., *Darwinism*, xiv. 448.
Wallace, E. (*c*) See A. W. Benn.
Wallace, E., *Outlines of the Philosophy of Aristotle*, (2nd ed.) v. 436, (3rd ed.) viii. 455 ; *Aristotle's Psychology*, (T. Davidson) vii. 586 ; Death of, x. 159.
Wallace, W. (*a*) Ethics and Sociology, viii. 222. (*c*) See J. B. Mayor, H. Vaihinger, H. Sidgwick, H. Taylor, F. Paulsen.

Wallace, W., *Epicureanism*, vi. 145; *Kant*, vii. 448; *Life of Arthur Schopenhauer*, xvi. 141.
Wallaschek, R. (*b*) On the Origin of Music, xvi. 375. (*c*) See J. Donovan.
Wallaschek, R., *Ideen zur praktischen Philosophie*, xi. 591.
Wallis, H. W., *The Cosmology of the Rigveda*, xii. 615.
Ward, J. (*a*) An Attempt to interpret Fechner's Law, i. 452; Psychological Principles, viii. 153, 462, xii. 45; The Progress of Philosophy, xv. 213. (*b*) Mr. F. H. Bradley's Analysis of Mind, xii. 564; "The Psychological Theory of Extension," xiv. 109.
Ward, J., "Psychology" of, (A. Bain) xi. 457; "Psychological Principles (III.)" of, (A. Bain) xii. 311.
Ward, L. F. (*b*) Mind as a Social Factor, ix. 563.
Ward, L. F., *Dynamic Sociology*, viii. 619, (G. Allen) ix. 305.
Ward, W., *The Wish to Believe*, x. 302.
Ward, W. G. (*b*) Dr. Bain on Free-will, v. 264.
Ward, W. G., On Free-will, (A. Bain, S. H. Hodgson) v. 116, 226, vi. 107; *Essays on the Philosophy of Theism*, ix. 464; Death of, vii. 610.
Warner, F., *Physical Expression*, x. 465; *Growth and Means of Training the Mental Faculty*, xv. 419.
Wasserschleben, F. V. von, *Die drei metaph. Fragen nach Kant's Prolegomena*, xii. 629.
Waterhouse, C. H., *Insignia Vitae*, xv. 421.
Watson, J. (*a*) The Method of Kant, v. 528. (*b*) Mr. Spencer's Derivation of Space, xv. 537.
Watson, J., On Transcendentalism, (A. J. Balfour) vi. 260; *Kant and his English Critics*, 441, (R. Adamson) 557; *Schelling's Transcendental Idealism*, viii. 137; *The Philosophy of Kant in Extracts*, xiii. 449.
Watson, P. B., *Marcus Aurelius Antoninus*, x. 143.
Watts, R., *The Reign of Causality*, xiii. 295.
Webb, T. E., *The Veil of Isis*, x. 299.
Weber, E. H., Death of, iii. 295.
Weber, T., *Emil Du Bois-Reymond*, xi. 138; *Metaphysik*, xiv. 302, xvi. 297.
Weckesser, A., *Der empirische Pessimismus, &c., im System von E. v. Hartmann*, xi. 137; *Zur Lehre vom Wesen des Gewissens*, xii. 150.
Wedgwood, H. (*b*) The Foundation of Arithmetic, iii. 572.
Weinsberg, L., *Der Mikrokosmos, &c.*, xiv. 461.
Weir, A., *The Critical Philosophy of Kant*, vi. 596; *The Historical Basis of Modern Europe (1760-1815)*, xii. 301.
Weisenberg, W., *Theismus und Pantheismus*, vi. 297.
Weismann, A., *Essays upon Heredity, &c.*, xiv. 595.
Weiss, H., *Einl. in die christ. Ethik*, xv. 296.
Wenley, R. M., *Socrates and Christ*, xiv. 595.
Werner, J., *Hegel's Offenbarungsbegriff*, xii. 634.
Werner, K., *Die Italienische Philosophie des 19ten Jahrhunderts*, (I.-II.) x. 479, (III.) xi. 132, (IV.) 447, (V.) xii. 307.
Westermarck, E., *The History of Human Marriage*, xv. 288, xvi. 542.
Wetz, W., *Shakespeare vom Standp. der vergleichenden Litteraturgeschichte* (I.), xvi. 296.
Weygoldt, G. P., *Die Platonische Philosophie*, xi. 296.
Wheeler, B. J. See Strong, H. A.
Whittaker, T. (*a*) "Mind-Stuff" from the Historical Point of View, vi. 498; Giordano Bruno, ix. 236; Individualism and State-action, xiii. 52; Volkmann's Psychology, xv. 325, 489. (*b*) Prof. Delbœuf on the Curative Effects of Hypnotism, xiii. 148; E. B. Tylor's new method in Anthropology, xiv. 310. (*c*) See J. G. Schurman, H. Sommer, A. Bolliger, A. Meinong, G. J. Romanes, D. G. Thompson, W. H. Rolph, A. Fouillée, T. Lipps, M. Carrière, W. R. Sorley, P. Mainländer, C. Renouvier, W. Wundt, J. Delbœuf, G. L. Fonsegrive, F. J. Mach, C. Mercier, G. Lyon, J. H. Witte, T. Case, J. J. Gourd, G. K. Uphues, R. Eucken, G. Tarde, E. Koenig, J. Croll.
Wijck, B. H. C. K. Van der, *Nog Eens: Oorsprong en Grenzen der Kennis*, xvi. 551.
Wilson, J., *Thoughts on Science, Theology and Ethics*, x. 464.
Wilson, J. M., *The Principles of Morals*, xi. 436, (H. Rashdall) xii. 589.
Wilson, W. D., *Live Questions in Psychology and Metaphysics*, iii. 427.
Windelband, W., *Präludien*, ix. 162, (D. G. Ritchie) x. 135; *Gesch. der alten Philosophie*, xiv. 154; *Gesch. d. Philosophie*, xv. 430, xvi. 295, 550.

Winterton, F. (*a*) Philosophy among the Jesuits, xii. 254 ; The Lesson of Neo-Scholasticism, xiii. 383. (*b*) The Papal Condemnation of Rosmini, xiii. 622.
Wirth, J. U., Death of, iv. 603.
Witte, J. H., *Zur Erkenntnisstheorie und Ethik*, iii. 293 ; *Kantischer Kriticismus gegenüber unkritischem Dilettantismus*, xi. 134 ; *Das Wesen der Seele, &c.*, xiii. 306, (T. Whittaker) xiv. 133.
Wolff, E., *J. E. Schlegel*, xiv. 304.
Wolff, J., *Das Bewusstsein u. sein Objekt*, xv. 432.
Wollny, F., *Grundriss der Psychologie*, xiii. 139.
Word, The, (T. Harper) viii. 372.
Wundt, W. (*a*) Central Innervation and Consciousness, i. 161; Philosophy in Germany, ii. 493.
Wundt, W., *Der Spiritismus*, iv. 603 ; *Logik*, (I.) v. 296, (A. Sidgwick) 409, (II.) ix. 158, (J. Venn) 451 ; *Grundzüge der physiologischen Psychologie* (2te Aufl.), vi. 445, (French trans.) xi. 129, (3te Aufl.) xiii. 307, (J. McK. Cattell) 435; *Essays*, xi. 132; *Ethik*, xii. 148, (T. Whittaker) 285; *Zur Moral der literarischen Kritik*, 478; His theory of Psychic Synthesis in Vision, (J. H. Hyslop) xiii. 499 ; *System der Philosophie*, xiv. 607, (T. Whittaker) xv. 103.
Wyclif, J., *Tractatus de Apostasia* (ed. M. H. Dziewicki), xv. 289.

Y

Young's Theory of Colours, A. M. Mayer on the History of, i. 270.

Z

Zart, G., *Einfluss der englischen Philosophen seit Bacon auf die deutsche Philosophie des 18. Jahrhunderts*, vii. 155.
Zeitschrift für Psychologie u. Physiologie d. Sinnesorgane, xv. 439.
Zeller, E., *Plato and the Older Academy* (tr.), i. 572 ; *Socrates and the Socratic Schools* (tr., 2nd ed.), ii. 579 ; *Vorträge und Abhandlungen* (II.), iii. 152 ; *Greek Philosophy to the Time of Socrates* (tr.), (A. Seth) vi. 286 ; *Eclecticism in Greek Philosophy* (tr.), ix. 156 ; *Outlines of the History of Greek Philosophy*, xi. 121 ; *Friedrich der Grosse als Philosoph*, xii. 150.
Zetetical Society, The, vi. 603.
Ziegler, T., *Gesch. der Ethik : Die Ethik der Griechen u. Römer*, and *Gesch. der christl. Ethik*, xii. 146; *Sittliches Sein u. Sittliches Werden*, xv. 576.
Ziehen, T., *Leitfaden der Physiologischen Psychologie*, xvi. 294.
Zimmels, B., *Leo Hebraeus*, xi. 593.
Zimmern, Helen, *Arthur Schopenhauer*, i. 294; *Gotthold Ephraim Lessing*, iii. 290.
Zindler, K., *Beit. zur Theor. der math. Erkenntniss*, xv. 146.

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MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—ON PHYSIOLOGICAL EXPRESSION IN PSYCHOLOGY.

By Professor A. BAIN.

THE thoroughgoing concomitance of Mind and Body is here taken for granted as being all but universally allowed. The question, however, still remains how far the study of bodily organs and processes is of avail in psychological inquiries. Nobody maintains that these organs and processes can be entirely left out of account; they never have been and never can be so treated. Expressions are sometimes used incautiously that would seem to contend for the total neglect and dismissal of the physical side. Dr. Ward remarks that psychology knows nothing of muscle and nerve; yet the dying Emperor Hadrian, in the farewell address to his soul, cannot refrain from regarding it as *hospes comesque corporis*. Mr. Stout (*Proc. Aristotelian Society*, i. 1) argues the pros and cons with much minuteness, and decides as follows:—"As regards present achievement, I am disposed to assert that the help which psychology has received from the physiology of the brain is even less than the little which the physiology of the brain has received from psychology". Mr. Bradley, in discussing the important question of the psychical origin of our sense of activity (MIND xi. 321),

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refuses to accept any considerations derived from physiology. In such a question, one extreme may be as bad as another. Those that refuse all possible aid from physiology to psychology, have overlooked the lengths whereto we are already committed in the physical rendering of psychical facts. What they dwell upon most particularly is the very little that we know of brain-workings. Now, undoubtedly, it is true that we know little of those workings, but it is not true that we do not know anything. Moreover, as will be seen afterwards, the workings of nerve and brain are incontinently referred to in the common modes of speaking of mind. But the objectors to a physiological rendering of mental facts would find themselves involved in much deeper contradictions with usage, if, instead of speaking of nerves, they would refer to organs of sense and movement. The help rendered to the classing of our Sensations in their proper psychical character, has never been refused to psychology since Aristotle ; while to reject all consideration of Movement would require the treatment both of Emotion and of Will to begin *de novo*, and the attempt would infallibly break down.

It would seem, then, that an inquiry into the exact limits of the reference to the bodily functions, in speaking of the mind, has still to be made. The facts involved cover a wide area, and the illustration must be proportionally wide.

One very important clearance of the ground consists in a review of the psychical vocabulary, its character, and sources. The mixture of the psychical with the physical is such as to prove that mental processes, however distinct from bodily processes, have never owned even a vocabulary of their own.

Survey of the Vocabulary of Mind. A glance at the existing terminology of mind will easily show how it has been made up, and how indispensable material accompaniments have been in the process. The vocabulary, in its greater part, is due to the Greeks and Romans, although every people possessed of a language has supplied some of the names. We see that these names were, in the first instance, purely material; while, by exclusive appropriation to mental facts, many have more or less completely parted with their material signification, and suggest only the subjective meanings. Take as a few examples, *spirit*, *recollection*, *conception*, *intuition*, *emotion*, *irritation*, *impression*, *expression*, *sentiment*, *excitement*, *conscience*, *comfort*, *sympathy*, *delight*, *memory*, *discrimination*, *relativity*, *images*, *ideas*. This class of words may be regarded as faded or worn-out figures of speech—metaphors or metonymies of material origin : while,

to all intents and purposes, they are now mental or subjective; so that when they are used we are not led to any material meaning, least of all to any definite physical accompaniment of the mental state. Another class of names, also applicable to mind, still preserve their material meaning; that meaning being in some instances the strict material accompaniment. Such are the terms—*move, elation, life, trembling, grief, hatred, soothing, restlessness, blush, sore, wound, sleepy, scald, fever, agitation, commotion, staring, smiling, frowning, shock, throb, tension.*

A little examination will divide those physical accompaniments, that have been adopted also as names for mental states proper, into emotional adjuncts and voluntary adjuncts; that is to say, some are the expression of the emotional wave, as *smile, frown, tremble, blush, shock;* others give the voluntary act consequent on feeling, as *stretch, strain, pursue, avoid.* There is nothing illegitimate in either class of words; the material application does not detract from the propriety of the mental. What is more, it is an actual help and support. In order to conceive mental states with anything like clearness or force, we need all the suggestiveness that their well-known adjuncts can provide. This is a point now to consider.

Cases where the Material Adjuncts are helpful. Perhaps the most remarkable of these cases is the sensations of the five senses. In classifying, describing, and studying these sensations, we are very much aided by the study of the physical organs. Unnoticed shades of sensation can be suggested by these, while subjective characters can be confirmed by the known objective distinctions. It has never been proposed to go fully into the special sensations without reference to what physiology tells us of the organs; while, on the other hand, the subjective distinctions, when unusually well marked, furnish a clue to the physical or objective embodiments. Instances of this will occur as we proceed. So it is with the expository delineation of the different sensations within each kind of sense; a little knowledge of the physiology prepares us for imbibing and comprehending the psychological classes.

It is needless to make a parallel illustration from the Emotions, where the double language of mind is so useful and acknowledged.

Hypothetical Views aid Expression. Our knowledge of the nerve-processes, although not to be despised, is un-

doubtedly imperfect and leaves a great deal to be desired. Consequently we may not make use of it as a basis of subjective laws, or as carrying us much farther into the arcana of mind than we can go by help of subjective indications. Our analysis of memory, reason, and imagination, cannot be said to be suggested or confirmed by the physiology of the brain. But there is also another side to the case. If a subjective language were in existence adequate to cope with all the nice intellectual situations, we should not be justified in bringing in nerve-processes of a purely speculative kind. There are, however, a number of situations where expression is imperfect, inadequate, and unsteady: and for such situations a merely hypothetical supposition may be helpful, while it need not be abused.

Admitting the necessity of mixing material phraseology in the expression of the mind, we must, of course, observe the precaution of not giving the one as a substitute for the other: but ordinary care is usually sufficient to avoid this error. In the exposition of the mind, not only should this substitution be avoided, but a reasonable proportion should be observed in using the two vocabularies. The best mode of guarding against either subjective or objective excess in the terminology would seem to be to set forth every mental fact, first, under its known physical accompaniments, including convenient hypothetical adjuncts, and, next, in its purely subjective delineation. This done, we can survey the observed proportions and adjust them as we judge best: while it will be open to the critic to take exceptions to any undue fulness or irrelevance on either side.

The objectors to the use of physiological theory in dealing with mental processes dwell chiefly upon the intellectual functions: whereas if they were to attend more particularly to the senses, the emotions, and the will, they would have to change their language entirely. No man will ever discuss these departments without making a very large use of the terminology of the material accompaniments. It is simply a question of greater or less reference: it is not a question of subjective purity of treatment. Aristotle made the first commencement in the way of physical reference: his delineations of the physical side were crude in statement, but he did not err in principle. It is in the detailed exposition of these several departments of the mind that the question may be advantageously raised as to the suitable amount of physiological description in each particular case. The theory of Pleasure and Pain which governs

both the emotions and the will has long adopted a physiological embodiment, and the advocates for subjective purity should say precisely whether this is wholly illegitimate, whether it is excessive, how far it should go, and where it should stop. This may be propounded as a fair test of the sincerity of the subjective purist. In point of fact, it would help to solve what is a genuine problem not as yet solved by anyone, namely, to draw the line between the use and the abuse of physiology in the psychological region.

What I conceive to be inadequate reference to physical accompaniments may be illustrated from Mr. Stout's paper "On the Scope and Method of Psychology" (*Proc. Arist. Soc.*, i. 33). I give a few of his expressions as follows :—

"We must assume that every mental event is connected with a *neural* event;" "we are compelled to consider these *neural* occurrences which are immediately connected with mental occurrences, not as antecedent to those, but as concomitant with them." "What then is the value and import for psychological science of those neural accompaniments of mental events? I answer that from a purely theoretic point of view psychology is not bound to take any account of them whatever." "We have, in conclusion, to consider whether it is practically convenient to discard data which may be supplied by the physiology of the brain." "For example, the endeavours which have been made to find a material correlate to the association of ideas do not really advance the science of mind a single step."

My first observation upon these statements is that, under them, the only connexion of mind and body that is proposed to be taken into account is the connexion of mind and brain or the nerves. We should never know from Mr. Stout's observations that mind was accompanied with organs of sense, with organic processes, and with the muscular organs. My next observation is that the use of referring to bodily organs and processes is too much narrowed by his mode of putting the case. I propose to confute this narrowness from his own mouth, but I shall first avail myself of the following sentences from Dr. E. Montgomery (MIND x. 386) :—

"Now, as the veritable powers which have established the definite bonds between sensorial affections are themselves extra-mental, it is not likely that we should be able exhaustively to study the laws of perceptual combination by mere mental operations, unaided by experimental reference to the permanent source of stimulation and union which they represent. Who, indeed, finds himself ever thinking of feelings of touch without also calling into mind the organ of touch together with some touched object, or sets about invoking normal muscular feelings as perceptual building-material without presupposing actual muscles?"

This is precisely my contention, and my surprise is that there should be any occasion to make such a very patent remark. I will now quote another passage from Mr. Stout on a purely psychological question, *viz.*, the ultimate distinction of the Primary Mental Functions (*Proc. Arist. Soc.*, i. 142).

"The unity of the individual consciousness seems to depend on the successive salience and dominance of special presentations which constitute in turn the focus of the total mental activity from moment to moment. This is expressed in ordinary language by saying that we can only think of one thing at a time. Now the successive dominance of a single presentation, which gives systematic unity to mental process, depends on motor activity. Out of the multitude of impressions which are continually soliciting our senses, this or that special one is singled out *by muscular adaptation of the organs of sense*, by *vaso-motor action, causing increased blood supply to special parts of the sensitive surface*, and perhaps by *outgoing currents passing along the sensory nerves from centre to periphery*. The *concentration of attention on ideas* seems to be *effected by a similar mechanism*. Thus the unity of consciousness, and therefore the very existence of consciousness, depends on the focussing of presentations, and the focussing of presentations depends on motor activity. Hence motor activity is a necessary condition of the existence of consciousness."

It will be observed that the writer of the above, after devoting three sentences to subjective expression, leads off on the concluding phrase "motor activity" into the profuse employment of physiological language which I have here signalised by italics. It seems to me that he is quite right in doing so; that the language he employs is a relevant citation of the physical side of his subjective thesis, and that he has been urged, notwithstanding his theoretical aversion to the physiological reference, to make use of it as somehow assisting his conception of the subjective fact. Evidently, his refusal of physiological assistance was stated too exclusively in terms of nerve and brain, as if these were the only important bodily organs connected with the mind. Thus, to take his testing example—the material correlate to the Association of Ideas – it is perfectly true that the nervous processes accompanying association are very imperfectly known, even if they can be said to be known at all. But this is not a fair statement of the question as to the physical accompaniments of our intellectual processes. Instead of association of ideas, let us put the case of Memory or Retentiveness, one of the fundamental facts of our intelligence, and ask whether our knowledge, such as it is, of the physical accompaniments be wholly irrelevant. Do we in describing the operations coming under this head, such as acquisition

of knowledge, formation of habits, entirely and at all points exclude bodily accompaniments? It is no doubt the case that we largely make use of a subjective terminology, and that we can state the chief conditions of retentiveness by this means; for example, the two great essentials of repetition and mental concentration can be given without making use of physical language. But we very soon come to know, and it always has been known, with more or less precision, that bodily freshness and bodily fatigue play a vital part in the success of our endeavours. Now, while I doubt whether this condition could be expressed subjectively, it is quite certain that it never is so expressed. There are other conditions equally beyond purity of subjective statement. Thus, in order to impress the memory of a pupil with a given exercise, it is very desirable that the teacher's statement should be, in point of articulation, sharp, deliberate, and distinct, while the pupil should have his ears in such a condition of alertness as to receive the statement with effect. These conditions, I contend, are eminently physiological, although not what would be called profound physiology. I repeat, therefore, that the outworks of sense and movement, and the general tone, are to be taken into account on the physical side as much as the more inscrutable recesses of the cerebral convolutions.

I will now turn to Mr. Bradley (MIND xi. 321), who is even more emphatic than Mr. Stout in his assertion of subjective purism in psychology. He is attacking a position almost the same as Mr. Stout in the passage last quoted, *viz.*, the psychical origin and character of Attention or our sense of Activity, and, after discussing the point subjectively, he adverts, in concluding, to the supposed physiological argument that might be adduced by way of confuting his view. This leads him to say what he thinks on any or all attempts to bring physiology to bear upon mind.

"But such a question as the existence of a psychical activity is a matter which falls outside physiology. We might get from that science instruction valuable and, in some particulars, even necessary; but suppose that we knew (as I presume we do *not* yet know) the physical side of the psychical process, is it certain that about the main question we should not be precisely where we are now? For in the first place the existence of this or that feeling could hardly be deduced from physiological premisses if actual observation were unable to find it. And in the second place between a process in the brain and a consciousness of energy there is really a gulf which is not to be filled up. You may know from experience that they are found together, but, given the first, you could never have got to the second, and they remain in the end quite heterogeneous."

For my own part, I take leave to doubt the irrelevance and the uselessness of all physiological reference in this very question. I venture to think that Mr. Stout followed a sounder instinct, against his own theory, in making free use of physiological terms for substantially the same problem. When we talk of our activity—talk of ourselves as active beings—the first thing that we have to look to is the active apparatus of the body, as known by the name of the muscular system. Every act of bodily attention involves, in the first instance, some specific muscular acts; and when from the sphere of actuality, as in the employment of the senses, we pass to the sphere of ideality, the point is forced upon us whether or not this is still muscular activity in a transformed character. Evidence is adducible for, or against, the hypothesis. So much is to be said in its favour, that the opposite appearances are merely certain remaining difficulties that may possibly or probably be removed. Now when we have carried into the mental sphere our muscular agency under a new guise, we have found a genuine physiological activity, the interpretation of which has a decided relevance upon the psychological discussion. It may not be conclusive, but it is highly suggestive, and is at least an aid to us in stating the problem; and, as is often said, a problem well stated has already gone some way towards being solved. Moreover, if mental attention is not bodily attention idealised by being thrown more exclusively inward upon its nervous tracks, there is still to be sought within the compass of the system a factor of activity at present entirely unstateable. We cannot too soon set going an inquiry to find out what this is.

To meet the challenge, so often made, to produce any laws of connexion between the physical and the mental such as to throw light upon the workings of mind, I will refer more particularly to the Feelings and the Will, where the most conclusive illustrations can be adduced.

We cannot do better than advert to the great thesis of Pleasure and Pain, as such, with their results in determining volition. On this subject Mr. Bradley has an exceedingly elaborate and exhaustive paper (MIND xiii. 1), to which I will at present refer no farther than to take note of his mode of handling the undoubted and well-known physical accompaniments of our hedonic states. I venture to suggest that, if he adhered strictly to the view formerly quoted, he would never mention the physical side at all; or at least he would justify the use he makes of it, and admit that psychology,

on certain occasions at least, does well to bring in the aid of physiology. The example may be taken as a testing case of the employment of physiology, and as an opportunity of judging whether it is profitably or unprofitably cited.

Pleasure and pain are without doubt psychical states, and may be studied or contemplated purely as such. But when we wish to theorise upon them, so as to give a full account of all their important bearings, we find ourselves obliged very soon to advert to their physical causes or conditions. Thus, Mr. Bradley, while opening with a purely psychical inquiry, *viz.*, as to the connexion of pleasure or pain with Sensation, and with the Ego, proceeds to ask for their *physical* conditions. He discusses, and considers the discussion legitimate, how far pleasure corresponds with physical benefit and pain with physical injury. Then he inquires what are the strictly *psychical* conditions of pleasure and pain, *i.e.*, their connexion with psychical activity. His conclusion is, that there are conditions that are not psychical, as well as those that are. His most comprehensive conditions, which he develops at length, are harmony and expansion, which conditions he traces throughout in their double aspect of the physical and the psychical. In all this, I regard him as on the right tack; and I accord to him the further compliment of keeping the two sides distinct and apart in the course of his whole discussion, thereby complying with what I consider the chief propriety to be enjoined in the handling. So far he has done all that I have ever contended for, in regard to the inclusion of a reference to the physical side. Yet, even on psychical grounds, I believe he ought to have greatly widened his basis of examples of pleasure and pain. On the one hand, he should have dwelt more fully on the primary feelings connected with sensation, as well as the more elementary emotions; and on the other, he should have expounded more fully the higher æsthetic and other aggregates of emotion. His choice of examples is not even fairly representative of the difficult cases. It is not my purpose to enumerate those deficiencies at length, but the present argument makes it proper to cite one notorious department of our pleasurable and painful sensibility, I mean the region of stimulating drugs—alcohol and the rest. No one can enter upon the mode of action of these drugs without being thrown at once upon physical considerations. That they are physico-chemical agents affecting the constitution of the substance of nerves, and in that capacity bringing about mental exhilaration, is sufficiently plain, although the minute atomic changes are not precisely formulated. These drugs teach us

by a startling example, which many other facts contribute to support, that the physical constitution of the nerve-substance is a paramount condition of our sensibility, pleasurable or painful. The nourishment, exercise, exhaustion, depletion, chronic deterioration, of the brain, as a physical and chemical compound, form a body of received doctrine, both theoretical and practical, which no amount of squeamishness as to *neural* accompaniments to psychical processes will ever displace from the hold it has gained. Moreover, the dependence thus established by the leading example of stimulants and their consequences will suggest the application of the chemical view to such cases as the sweet and bitter in taste, as at least of equal value with any of the other hypotheses.

I propose now to widen the issue, so as to make the illustration of the use of the physical side more comprehensive, thereby vindicating its importance for the purposes already stated. The lowest step in the gradation of its employment is perhaps simple parallelism of psychical and physical processes without obvious advantage to either. Where a psychical region can be fairly and fully analysed by psychical introspection, we might rest contented, and say nothing of physical accompaniments. Still, there is a certain satisfaction in being able to assign, at the same time, a concurrent series of physiological organs and processes, and it is a matter of choice whether or not we care to have these adduced. Perhaps the Reflex Operations of the mind might be quoted as a case in point ; it being possible to classify and describe those processes, not certainly without physical references, for they all consist more or less of conspicuous bodily movements, but without special reference to the nerve-centres that are their known seats in the cerebral system. I will not argue this point further, but will go on to less equivocal examples.

The sensations of the Special Senses have been already referred to. They are of course very numerous, very distinct, and all-important both for Feeling and for Intelligence. They constitute a vast psychical mass, which we might study on the purely psychical or introspective side. We might, in the interests of purism, refuse to take any notice of the bodily organs that are associated with them. Can any one point out what would be the positive gain of this affectation of purism ? It is much more easy to assign the loss. By taking the physical organs in separation, we can, in the most compendious manner, exhaust the modes of

sensibility under each, and can thus arrive at a wide and orderly view of this great multitude. Nay more: when we look minutely into the anatomy of the several organs, we obtain further helps to the subdivision and distinction of the individual sensations. By tracing tactile nerves in the tongue and in the nostrils, we discriminate the feeling of tactile pungency from the characteristic sensibilities of taste and smell.

The special senses further exemplify the utility of the physical side as a *handle* to the mental. We have already seen the difficulties in obtaining an adequate subjective vocabulary for the immense detail of our psychical experience. For this vocabulary, the physical accompaniments are largely invoked and are found to answer the end. In connecting the special senses with their several organs, we are under no temptation to confound mental and physical facts, while the physical fact helps us to realise, to retain, and to reproduce, the mental. We distinguish the two great elements of visual sensibility by the muscular and the retinal portions of the eye; and no conceivable harm arises from thus intruding the purely material adjuncts of our vision. It is needless to pursue the illustration. Usage has lent its all-powerful confirmation to the combination of the mental and the physical in this part of the mind.

We will next cite the Organic Sensations, touched on already, as being still more forcible in argumentative value for our general thesis. Here we have an enormous mass of sensibility, affecting profoundly our entire well-being. Psychically, there is not here the same easy discrimination of the different kinds as in the five senses. Yet, the distinguishing and classifying of these sensibilities make an important part of mental science, and yield the greatest practical consequences. Now, without the clue that a knowledge of the several organs furnishes, such an analysis must needs be very imperfect. In point of fact, all the attempts to make the discrimination have been more or less guided by the connexion with distinguishable organs. The stomach and the lungs perhaps take the lead in giving distinctness to the departments of sensibility associated with each. The muscular system, viewed as an organ liable to changes in nourishment, fatigue, exhaustion, physical injury and derangement, has also a distinguishable class of sensibilities.

The reference to the Muscles opens up the much discussed question of the physical side of our subjective sensibility to pressure, strain, and active exertion in every form. This

case is illustrative, in a way of its own, of the value to be attached to the study of physical concomitance in mind. It so happens that, in this region, the subjective analysis is self-sufficing, that is, independent of hints or confirmation from the physical side. It will probably be admitted by all the disputants on such a well-threshed question, that subjectively we can establish as distinguishable modes of consciousness the following series of states of feeling :—Sense of energy expended, pleasure of muscular exercise, pain of fatigue, pleasure of repose, pains of morbid states, as cramp, not to speak of minuter variations of those leading modes of sensibility. Now, working upon the usual analogies of the senses, where we can generally assign to each important variety of sensation a local seat, there would be a propriety in assigning some distinct mode of stimulating muscle to each of the several classes now enumerated. One hypothesis connects the sense of energy with the out-going motor current ; while the pleasures and pains of exercise and repose, which can be best viewed as passive sensation, would accompany the ingoing sensory current through the sensory fibres of muscle ; to these might be added any known adjuncts of sensation from the peripheral parts involved in muscular action. There would be a certain congruity with the subjective facts in this mode of assigning the concomitance ; yet its verification would not add to the evidence of our subjective analysis, and its overthrow would not impair the validity of that analysis. We cannot quote this instance as even particularly illustrating the use of a physical hypothesis in supplying subjective expression. We derive all the benefit of the physiological reference by using such objective terms as muscle, motion, action, rest, without committing ourselves to the concomitance of our feeling of energy with the out-going current.

The powerful influence of changes of Temperature would have to be adduced in an exhaustive rendering of our organic sensibilities. While the feelings connected therewith are of the most commanding kind, the physical concomitance is too palpable to be ever overlooked ; and whatever contribution physiological researches may make towards explaining its mode of action throughout the body, will be adopted by the psychologist in his rendering of the subjective states.

Under this same head we need to adduce the nervous substance at large, which, in its own nature, goes through all the phases of nutrition and exhaustion, exercise and repose, health and disease, integrity and injury. No doubt the organs of nutrition and purification generally are concerned in maintaining the good condition of the brain and nerves,

with all that depends upon these. Still it is possible to assign mental states in more direct connexion with the nervous substance as such, while it would be impracticable to conduct the analysis without assistance from what we know of the physics of nerve. In spite of the mingling of all the organic functions in the general physical tone of comfort or discomfort, elation or depression, there is no mistaking the characteristic sensibilities of the stomach, the lungs, or the muscles, and to a certain extent, the brain and nerves also. We do not need at this stage to penetrate the deeper arrangements of the cerebral centres, their nerve-plexuses, and complicated distribution of nerve-fibres; all this remains over as a distinct inquiry, to be judged apart.

Connected with the physics of the brain is the important state designated under the name *excitement*, with its opposites *quiescence*, *languor*, *repose*, *drowsiness*, *sleep*, and *insensibility*. With all this mental gradation, there is an accompanying physical gradation, which can be expressed in physical terminology, and cannot be adequately stated without that help. The physical symptoms are prominent and conspicuous to the eye of the observer, and are part and parcel of the received modes of stating and conceiving the mental facts. We know the organs and processes that participate with the brain-action in the various degrees of conscious intensity. In ignoring these, we should lose much and gain nothing. In fact, if we were prohibited from noting the physical aspects of this department of sensibility, we should surrender the study of it altogether, at least as a branch of psychology.

Inseparable from sensation is the general discussion of Pleasure and Pain (to which I have already adverted in another connexion), although the thesis must be considerably widened in order to attain its full compass in the mind. At what point, or in what connexion, it should receive comprehensive discussion is a matter for consideration, and may be decided in different ways. What we are here concerned with is the well understood connexion between known physical processes and a very large number of both pleasures and pains. I have already had occasion to allude to this involvement, and have noticed how unavoidable is the introduction of the physical side in anything approaching to a thorough investigation of the most general laws of our sensibility in this respect. I will now carry the illustration a step farther by citing the theory of the Will, in which Pleasure and Pain operate as the motives, and our muscular organs

as the instruments. It is true that a very large portion of our voluntary activity can be stated in an almost purely subjective terminology. This, however, does not apply to the overt forms of voluntary action, which are the essential forerunners of the deeper modes where subjectivity is most fully exemplified. We may, at this stage, leave out the physical side of the pleasure or pain that is the motive, but the resulting activity is physical or nothing. Now the theory of the Will may be a subjective theory to this extent, that we may simply state as generalised facts that Pleasure moves us in one direction (*viz.*, for its own conservation or increase) and Pain in another direction (*viz.*, for its removal or abatement). This is to confine ourselves to strictly subjective affirmations. We may, by full examination of facts, improve upon these generalities as so stated ; we may add to their precision in every way by needful qualifications and limitations, so as to meet the various complications of the problem. All this is proper to be done, and ought, on no account, to be dispensed with. There is, however, a physical aspect that may also be entered upon, but should not be jumbled up with the other aspect. It should be given quite apart, and have its value put to the test, according to the requisites imposed upon physical theories.

The kind of speculation now supposed would consist in seizing hold of pleasure and pain by their known physical aspects, and inquiring whether, physiologically, there is any natural sequence between those and the activities that follow on pleasure and pain as disclosed by subjective introspection. For example, if pleasure is associated with the furtherance of vital energy and pain with its depression, there would be a physical link between pleasure and increased activity, and between pain and the failure or diminution of activity. This is a hypothesis and nothing more. It may be shown to have a certain range of application, while it has apparent and obvious shortcomings. The question may fairly arise in connexion with such a hypothesis—does it amount to an abusive application of the physical side? I think not, if due precautions are observed. I admit that the theory of the Will must rely, in the first instance, upon subjective sequences. In the settlement of these we should scour at large over the wide region of subjective experience. We should be able to present an unbroken array of purely mental instances, as it is possible to do without further allusion to the physical than is required by the character of the active instrumentality. When all this is done, it is open to us to see whether a concurring line of physical

causation may be assigned for any portion of the facts. It is perfectly clear that, for this region at least, the psychical is the fact most immediately within our comprehension. The physical on the other hand is hazardous and hypothetical, but perhaps not entirely without relevance. Even if only a link here and there is fairly assignable, yet if that link has anything to be said in its favour it may chance to aid in settling some of the doubtful transitions in the psychical series. We cannot know this till we try: the attempt is worth making; and, if it fails, we simply remain where we were. One advantage at least may be claimed for this and for every other like attempt, *viz.*, that it keeps us fully alive to what is involved in a physical hypothesis, shows us the propriety of reserving its consideration, and consequently of carefully excluding every item of the physical from the psychical study. This in itself is no small advantage. Not only so but it is the sole conceivable method of avoiding the muddle that the purists complain of.

The problem of Evolution has now found a *locus standi* in science generally, and in physiology and psychology particularly. Although but a hypothesis, it is a hypothesis that has thrown its fascination over scientific inquirers. It crops up everywhere in connexion with the mind, and with the region of Will in a prominent fashion. The physical consequences of pleasure and pain are a two-fold activity —Expression and Volition. It is debated whether, in evolution, expression be prior, and volition posterior. For the more practical uses of psychology the speculation is unimportant; it ranks in value with the analyses of Space, Time, Cause, Unity, &c., into their psychological elements and beginnings. Now, for verification of any hypothesis as to priority between the two forms of the physical outcome of feeling, introspection is powerless. The sequence must be taken on the physical side alone, and so, in point of fact, is it argued, by Darwin for example, in favour of Volition. And if the evolutionist, after assuming this priority, were to go a step backward, as he is bound to do, in order to fill up a gap in the grand sequence of cosmical cause and effect, he must proceed upon physical connexion exclusively. The hypothesis now adduced is one among others in this direction.

Next, as regards the Emotions, taken in themselves, the tracing of physical concomitance is unavoidable, and is seldom evaded. Indeed, when bringing forward the more

fundamental and elementary emotions—Fear, Love, Anger —the physical signs are too manifest to be overlooked ; it is only when emotion is highly idealised and compounded that we discard such references, and treat the case by subjective methods alone. This, however, is too absolutely stated, if we take account of the handling of emotion in Art. And even in the strictest scientific analysis, the physical expression, so manifest in the primary modes, although refined and attenuated, is still discernible and suggestive in their combinations. The laws that regulate the rise, concurrence, conflict, and subsidence of emotion can be traced subjectively; while their physical embodiment, being also known, passes through phases of physiological cause and effect, which serve to confirm and correct the introspective inductions. Whether avowed or not, inquirers do not scruple to go through the double sequence, so as to make the two sides mutually illustrative.

The recent researches in Psychophysics call for some remark, though they may be said to speak almost for themselves. The experiments are made upon the physical side, but not to the exclusion of subjective reference ; in fact, they are experiments of concurrence or concomitance in order to ascertain general laws of concomitance, and to derive whatever benefit may be obtainable from the attainment of such laws. We cannot refuse to these researches the merit of satisfying an enlightened curiosity, if nothing further ; which, indeed, is the sole justification of a very large amount of our most highly patronised researches. But if such researches were to attain anything like precision in their object of determining laws of concomitance, they could hardly fail to assist us in clearing up subjective sequences ; at any rate, they would help to steady and confirm, and most decisively to express, the sequences indicated by pure introspection. As now conducted, these researches are more and more pressed into the service of every one of these ends, and admit of being criticised accordingly. No psychologist would discuss the Senses without taking notice of Weber's experiments on Touch—a line of investigation since exemplified in every one of the senses.

It is a well known fact that any form of muscular activity that we happen to be engaged in is arrested by a sudden mental diversion. We cannot easily carry on mental work and bodily work at the same instant. This is formulated on its physical side by Dr. Ferrier in these terms :—" The internal diffusion of nerve-energy involved in thought, and

the external diffusion of it in muscular action, vary in an inverse ratio". The grounds of the principle are physiological; the results have to be stated psychologically, seeing that they regulate the course of our inmost thoughts.

The "rhythm of Attention," or the intermittent character of mental exertion, is a very great fact of the system, and its precise elaboration and definition can be best approached from the physical side, as in the psychophysical laboratory. The position is emphasised by Herbert Spencer that "nerve is not capable of continuous stimulation or continuous discharge". Otherwise put, "the so-called nerve-current consists of successive pulses". The alternate remission and recuperation of our active energies, as embodied in muscle and nerve, is a physical law with psychical consequences in every region of our mental being. Whoever would see a full development of this law, as well as a fruitful rendering of the thoroughgoing concomitance of Feeling and Nerve-change should peruse Mr. Spencer's *Psychology*, more especially pt. i. Indeed the whole work is a sustained testimony to the propriety, if not the absolute necessity, of carrying physical concomitance into every portion of our mental nature.

There is one great law connecting Sense with Intellect, which has everything in its favour, and, so far as I know, nothing against it. If we reckon it still as but a hypothesis, it is one of very great probability. It relates to the *seat of ideas* obtained in the first instance through the senses, and declares the nervous tracts to be the same in both. There may be slight qualifications to the principle, but nothing to affect its substantial correctness. If there were no other law of nervous concomitance with intellectual function, this alone would redeem the search for *neural* accompaniments from superfluity or futility. The psychical bearings of the principle are most important, it being as yet the only key to facts of hypnotism. I need only refer to the adoption of it in that view by Edmund Gurney. Of course, neither this nor any other such law should be overstrained, or regarded as absolute. For one thing, a difficulty may be started to the effect that we may be thinking of one image and looking at another, thus causing a conflict of internal nerve-currents. The difficulty will no doubt have to be met, and, in meeting it, the principle will be either confirmed or modified; indeed, some progress has already been made in this direction.

Another great physiological truth affecting our mental operations universally, and likely to supply the explanation

just desiderated, is the need of a *motor response* to sensation in order to full consciousness of the state. This condition seems to grow out of the very structure of the nervous system, and has all the universality that we should expect in consequence. In a recent article in MIND (xii. 490), Dr. Maudsley illustrates this position with a fulness and a pointedness that dispenses with repetition in this place. To ignore the physiological truth is wilfully to blind ourselves to psychical helps. I have already had to advert to this condition in a previous page. It is dwelt upon with special emphasis by Dr. H. Münsterberg, as a guiding principle of his researches; my only doubt is whether he is not overstraining it. It is, however, enough here to quote it as a telling example of a really luminous physiological concurrence not to be neglected by any psychologist.

To come back again to the transition from Sense to Intellect: it has been always impossible to avoid describing ideas as modified repetitions of sensation, and employing for that purpose the materialism of the sense-organs. The language of thought—image, picture, idea, trace—is a proof of this origin. Whether accurate or inaccurate, expression demands such references. What is more: in order to state to ourselves the existence of sensible impressions and other results of thought when out of consciousness, we need a bold resort to material processes. When occupied with some present sensation, we are aware—and nobody has ever denied or thought it proper to ignore the concurring nervous processes, so far as inferrible—that nervous currents are proceeding from the sense-organ inwards to the nerve-centres, and ultimately reaching the brain-cortex, with responses in the shape of muscular stimuli. Let now the attention be transferred, let an entirely new and distinct sensation occupy the consciousness, and what becomes of the nervous agitation of the previous moment? It might be like the waves of a pool disturbed by a stone, persisting for a time and then ceasing for good. This, however, cannot be the case. For a sensation that has once occupied us for a time, while by a change of attention it is made to vanish, is found capable of recurring as an idea once and again in the same hour, or the same day, or even fifty years afterwards. Now, it is forced upon us, as a query if nothing more, Where are those sensations when out of consciousness? We want at least a language-aiding hypothesis to enable us to conceive what gives no sign of existence. The usual resort has been a very gross and imperfect metaphor—the 'store-house' or 'receptacle' of memory—material enough in all conscience, but very

defective as a psychological statement. Well, without pretending that we can verify any one view of the arrangements and processes of the nervous system that are the physical support of memory, we cannot help craving for some hypothesis, as far as the lights of physiology will carry us. We do not find that such hypothesis leads to any perversion of the psychical facts; while it need not be rated beyond what it is really worth, *viz.*, a help to expression. Its value does not necessarily stop there; we may be led by it to canvass facts of mind on the one hand and of body on the other, so as to confirm or confute it, and ultimately replace it by something better.

The physical conditions of Consciousness in general have been much studied of late, and the results have been on the whole decisive and valuable. They have been recapitulated with additional illustrations in Dr. Maudsley's article just alluded to. There would be no assignable gain to psychology by blotting out all these speculative inquiries, based as they are upon accessible and well-ascertained facts. Importance is justly attached to the limitation of the conscious area, and the reasons of that limitation can be stated physiologically with even more precision than psychologically. In the latter view, all we can say is, that we attend only to one thing at a time, which is not true except under qualifications; and, in stating these, physiology is our greatest help. The more general conditions of conscious wakefulness, as opposed to the unconscious modes of languor, sleep, swoon, as already remarked, are pre-eminently related to the science of mind proper. The decline and cessation of consciousness in certain operations that are properly mental, as in the consummation of habit or routine, is an important item in psychological theory.

If we advert more particularly to the *abuse* of the physical side, we can easily see what it must consist in, now that we have surveyed the various examples of the use. It is, of course, abused when it is unnecessary, and, still more, when it is mischievous. But the point is, what are the circumstances that render it mischievous as well as unnecessary? While eminently applicable to all the phenomena of mind at their elementary stage—Sensation, Intellect, Emotion, Will—it ceases to have the like bearing in the higher complications; that is to say, it cannot be assigned with precision, or even with suggestive hypothesis. Taking, for example, the Emotion of Fear in its most elementary form, the physical accompaniments are both assignable and sug-

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gestive. The same might be said of the Tender Emotion, and of Resentment or Malevolence, but in a compound of these with one another and with a mass of intellectual association, it would be a mistake to trace physical workings beyond the inevitable consequences in outward expression and in voluntary action. The analysis of the Sublime, for example, is rightly conducted on exclusively subjective lines. In the discussion of Consciousness at large, no one would appeal to purely physical accompaniments. All this leaves to the introspective inquirer by far the largest portion of our mental constitution. Thus the question as to physiological conditions is still a comparatively small part of a well-developed system of psychology.

As regards Intellect proper, we have seen the importance of indentifying the nervous tracts of ideas with the tracts of the corresponding sensations. But, now, if we recur to the test-example of physiological aid in clearing up mental processes, *viz.*, the Association of Ideas, our final decision upon it must be to the following effect. In all that part of Association that states the order of recurrence of our ideas in Memory, subjective investigation is paramount and exclusive. Moreover, it is eminently efficient for the purpose in view. The important circumstance in our intellectual trains is the fact that they repeat the objective world, where our mental grasp is at its utmost, and disclose the laws of their order with facility and precision. The first really acute thinker that rose to a statement of the question—Are there laws of sequence in our ideas?—could scarcely fail to discern these laws nearly as we now have them. Introspection is alone equal to this task; physiology has no part in it now, and in all probability never will. The highest conceivable advances in our knowledge of nervous processes and arrangements could only give a very imperfect rendering of either Contiguous Association or the Attraction of Similars. So much for one aspect of the problem.

There is, however, that other aspect whereon I have already dwelt. While the laws of order of recurrence of thought are fundamentally unalterable, they are qualified by a condition, or set of conditions, which are stateable not merely as psychical facts but as physically conditioned; and if so, physical conditions play a concurring part not to be ignored. The state described by a variety of names—Conscious Intensity, Excitement, Mental Concentration, Attention, Interest—is expressible both subjectively and physiologically. Even with our present knowledge the physiology of the state is important and suggestive, and future researches may add

to its precision and its helpfulness as a guide in practice; while our subjective study has probably even now reached its culminating point. This, then, is the answer to the challenge as embodied in the instance of Association.

It is manifestly an abuse to give a physical link as the substitute for a psychical or mental. The mistake is not often made in reality. When an orator in the House of Commons objects to the union of two principal State-offices, as too much for one brain, he is not necessarily a materialist; he merely uses the acknowledged dependence of mind on brain as a figure of metonymy to make the statement more impressive. Once grant that every one of our mental processes has its physical concomitant, and there is no need, and no temptation, to make the physical take the place of the mental except in the figurative way.

Whether a professed psychologist—teacher or writer—gives up too much of his exposition and investigation to purely physical incidents, is a matter solely of the proprieties of his position. Every expositor is apt to give an undue preference to one part of his subject; while some teachers pay too much attention to the physical, others pay too little. The most ambiguous position of any is the statement of those instances where there is a manifest assignable concurrence of physical and mental without any obvious mutual lights or reciprocal gain. It may be said that a physiologist should not trouble himself with psychical accompaniments that suggest nothing physiologically and *vice versâ*. Such cases, and no doubt there are such, may be said to fall between two stools, and deserve to be neglected or discarded. What remains to be said for them is simply the gratification of intellectual curiosity, together with a contribution to the establishment of the universal law or bond that unites the mental and the physical. One instance in point—the Reflex Operations—has already been adverted to. We may, however, adduce the far more striking example furnished by the researches of Ferrier and others on Cerebral Localisation. A considerable amount of scientific interest has been aroused by these laborious inquiries; but they have added nothing to the explanation of our intellectual workings, while in Physiology the interest is purely theoretical. Possibly, they may be the beginning of great results on both sides; but if we were to insist on the ideal of the subjective purists we should make no mention of them in Psychology proper.

One extremely important aspect of the union of Mind and Body is presented by the circumstance that has received prominence only in later times, that we are constantly applying spiritual remedies to bodily ailments, being often unaware of what we are doing. This ignorance is not so frequent now as it was in former times; we are becoming gradually more disposed to employ physical treatment for purely physical maladies. It is the fact that depression due to physical causes may be more or less removed by applications of an intellectual or moral kind; as when a sufferer from illness is cheered by the sympathy of friends. On the other hand, a blow of a purely mental nature can be sometimes effectually met by a physical tonic. The interaction of the two sides of our being in those instances has very great significance. There should, however, be no mistake about it. We should understand that the first and most direct and efficient remedy for physical derangement is physical treatment; and so with the mental: "Rachel, weeping for her children, and would not be comforted, because they are not". When we fail to remedy each mode by its own kind, we may properly make trial of the other kind, and may have a partial success. What we need is to appreciate exactly the case that we have to deal with, and to ply the most suitable weapons at our disposal. Past history records a long series of mistaken renderings of human misery with a corresponding misjudgment in the choice of remedies.

II.—APPERCEPTION AND THE MOVEMENT OF ATTENTION.

By G. F. Stout.

I propose by the present article to prepare the way for another, which is to treat of the function of Language regarded as an instrument of Thinking. To this end, I shall examine in general the process of thinking, so far as to enable me to indicate in broad outline the mode and degree in which this process is affected by the use of language. The result thus reached will then serve as a starting-point for my second article.

Thinking is action directed towards intellectual ends. Intellectual ends are attained by an appropriate combination of movements of attention just as practical ends are attained by an appropriate combination of movements of the body. If, therefore, we desire to explain the process of thinking, we must clearly determine the nature of active Attention. This is not, however, a complete statement of the problem before us. The analogy between practical and theoretical activity holds good also in another important respect. The efficacy of our actions as directed to practical ends depends on the nature and connexions of the material things on which we act as constituent parts of a physical system. Similarly, the efficacy of the movement of attention as directed to theoretical ends depends on the nature and connexions of the presentations attended to as constituent parts of the mental system —the *totum objectivum*. This part of the subject is covered by the theory of Apperception, as the word is applied by followers of Herbart, and more especially by Prof. Steinthal. Attention and apperception reciprocally determine each other. It is through apperception that a presentation acquires the significance and interest which enables it to attract attention. On the other hand, the heightened intensity which accrues to it as the object of attention enables it to react with increased energy upon the components of the mental system to which it belongs. In tracing the development of intellection, it will be found necessary to bear in mind continually both the essential distinctness and the thorough-going interdependence of these two processes.[1]

[1] What I here call Attention, is called by Wundt Apperception. I prefer the Herbartian application of the term, Apperception, because I know of no other word which can be conveniently used to express the same meaning.

§ 1. *The Movement of Attention.* The movement of attention is the process through which particular presentations are successively singled out from the total system of elements constituting the individual mind to receive special salience as contents of consciousness and special efficiency as factors determining the course of mental events. The exact nature of this process is far from being fully ascertained. But modern psychological and psychophysical researches seem to have placed one very important point beyond reasonable doubt: Bain, Ward, Ferrier, Münsterberg, N. Lange and Ribot, although they are in other respects more or less at variance, concur in regarding attention as a motor process. Considerable progress has also been made in determining the special nature of the motor elements involved. Modifications of breathing play an important part in the effort to attend, as well as in all other motor exertions. This is admirably brought out by Münsterberg's experiments on the 'Time-Sense' (see MIND No. 60). Concentration of attention also involves vaso-motor action, determining the direction of the blood-supply to special parts of the brain or sensory surface.

It is, however, most important to lay stress on the part played by muscular movements and tendencies to muscular movement. Specific tendencies to innervate certain groups of muscles form integral constituents of every presentation considered as a factor in the psychological mechanism[1] All distinct sense-perception involves muscular adaptation of the organs of sense. Münsterberg in the course of his experiments on the subjective measurement of time, had occasion to make a careful and accurate examination of these adjustments, and I here quote the graphic account which he gives of his experiences (*Beiträge zur exp. Psychologie*, ii.) :—

"When visual impressions are received by me at certain irregular intervals,—when, for instance, at intervals of from one to three seconds a bright object appears against a dark background and again disappears, -- I feel on each repetition of the stimulus a tension in the muscles of the ocular cavity, as they turn my eyes steadily towards the illumination; I feel how all the muscles of the eye contract to keep the gaze sharply fixed; I feel how the muscle of accommodation is strained to produce distinct vision; in short, I am conscious, as soon as the stimulus begins to act, of a condition of heightened tension in the organ of sight, by which the visual impression gains in clearness and becomes predominant over other contents of consciousness at the moment. Further, when the stimulus is powerful, I feel that the muscular tension which it thus occasions, affects not only the eye, but also the muscles of the head and neck,

[1] I do not say that they form integral constituents of every presentation considered as a content of consciousness, because I do not wish to take a side in the controversy concerning the sense of effort.

so as to keep the head exactly fixed in a favourable position for receiving the impression. Sometimes I am aware that the motor innervation extends even to the muscles of the arms and shoulders, as if I wished to hold the stimulus fast; and the muscles of the chest are also brought into play as if I wished to hold my breath in order to apprehend the impression with all possible distinctness."

These muscular adaptations form a most important part of the process by which we attend to percepts. They constitute a complex motor activity giving predominant clearness and dominance to a presentation, and attention is just such an activity.

It is important to notice that no sharp line of demarcation can be drawn between muscular action which serves to produce clear apprehension of a percept and that which produces physical change in external things. The two to a large extent coincide. It is true that we do not change a thing merely by fixing our gaze upon it. But the case is different when we lift a body in our hand. We then by the same act alter the position of the body and enable ourselves to appreciate its weight more distinctly. It may in fact be laid down as a general rule that all muscular action, in so far as it is not automatic, tends to give distinctness and dominance to the sensations by which it is guided.

The process of attending to ideas ordinarily involves at least a partial and modified reproduction of the same motor activities which constitute attention to the corresponding percepts. I call such reproduction partial and modified, because, as Prof. Bain points out, it for the most part falls short of actual movement. This is however by no means always so. It is quite possible to fix attention on an idea by means of actual movement. Thus we may obtain a clear image of a geometrical figure by tracing it in the air with the tip of the finger. The same result may be produced by a corresponding movement of the eyes. Similarly, we may by movements of the organs of speech strengthen the mental representation of an articulate sound without actually uttering it. So, too, we can by greater or less convergence of the eyes help ourselves to picture an imagined object as situated at a greater or less distance from our bodies.

Even when attention to ideas is not accompanied by actual movements, it often involves a noticeable tension of the muscles, similar to that which arises when we make an effort to move and at the same time by a counter effort arrest the intended movement in its first inception. Thus, when we concentrate attention strongly on a visual image, we feel a muscular strain localised in the ocular cavity.

Muscular sensations of this kind are very much intensified by an attempt to accelerate the speed with which attention passes from one object to another. If I endeavour to repeat mentally a verbal formula, hurrying through it with the greatest possible rapidity, the strain in the organs of articulation becomes painfully intense. The same thing happens, *mutatis mutandis*, if I endeavour to bring before my mind's eye in very rapid succession the parts of a remembered scene.

Attention to ideas is not always accompanied either by actual movement or by any very appreciable muscular strain. But there are cogent reasons for believing that, even when these are absent, the action of attending to a representation is constituted by a modified revival of the same motor impulses which enter into the corresponding perceptual experiences.[1] The idea of a movement is the movement in its commencement, and all ideas are to some extent ideas of movement. All sense-perception involves, as we have seen, muscular adaptations of some kind, and all mental imagery is ultimately derived from sense-perception. Hence every presentation includes as part of its own being a tendency to innervate certain groups of muscles in a specific manner. These motor dispositions play a two-fold part in the process of concentrating attention. On the one hand, they give distinctness and vividness to the sensory constituents of the mental complex to which they belong; on the other hand, by arresting incompatible motor processes they exclude from clear consciousness the sensory elements with which these processes are connected. The second of these effects is referable to the general law according to which a group of motor innervations tends to inhibit all other groups which are not automatic. It is more difficult to obtain a clear view of the way in which a representation derives distinctness and intensity from the motor impulse with which it is connected. N. Lange seems to think that all depends on the faint excitation of the muscles concerned giving rise to muscular sensations, which reinforce the corresponding elements of the ideal complex and so indirectly intensify the complex as a whole. Dr. Ferrier holds that the motor impulse takes the form of attention to ideas because it is hindered from producing actual movement. According to him the outgoing wave of nervous excitation,

[1] Cp. N. Lange, "Beit. zur Theorie der sinnl. Aufmerksamkeit, &c.," in *Phil. Studien*, iv. 390; Münsterberg, *Beiträge*, i. 137; Ribot's *Psychologie de l'Attention;* and the writings of Bain and Ferrier *passim*.

being arrested in its course, becomes diffused within the brain itself. Dr. Bain also seems to incline to this view. Probably the causes indicated by Ferrier and Lange respectively are both operative. However this may be, it seems clear that the positive effect of the movement of attention is to a large extent the necessary correlative of its negative effect. The relative distinctness and dominance of the idea attended to is due in great part to the suppression of competing presentations by arrest of the motor processes with which they are connected.

§ 2. *Attention, not an occasional phenomenon.* Attention is not an occasional act. In the ordinary course of waking life we are constantly engaged in attending to some presentation or other or in transferring attention from one presentation to another. I think it needful to insist on this point because Prof. Ribot seems to take a different view. He defines attention as a state of monoideism; by this he means that all the mental forces converge upon the idea attended to, which thus becomes the focus of the total mental activity at the moment. This account of attention is in full agreement with that which I have given above. But when Prof. Ribot proceeds to assert[1] that the state of monoideism is an occasional and exceptional phenomenon, he seems to be confusing a mere difference in degree with a difference in kind. Under ordinary conditions, a more or less complete monoideism is a constant character of our mental life. From moment to moment special presentations are singled out to receive unique salience as contents of consciousness, and unique efficiency, as factors operative in mental process. These presentations may not fully preoccupy the field of consciousness. There is often an outer zone, as Mr. Sully calls it, of comparatively vague and feeble imagery. When concentration of attention is most strenuous and sustained, monoideism is most complete. The outer zone may then nearly or altogether disappear. But the difference in clearness and strength between the objects of attention at its highest pitch of concentration and those which become successively salient and dominant when we make no exceptional effort to attend is a difference of degree bridged over by all manner of intermediate gradations. In order to account for it, we do not need to assume the operation of a special kind of activity in the one case which is absent in the other. On the other hand, the difference

[1] *Psychology of Attention* (Eng. trans.), p. 118.

between an object of clear consciousness at any moment and the other constituents of the mind at the same moment is, so to speak, an unbridged chasm. In order to account for it we must assume that the unique salience and dominance of the presentations which successively occupy the focus of consciousness is due to a specific process. This process must be called attention, if the language of psychology is to mark scientific and essential instead of comparatively trivial and popular distinctions.

§ 3. *Mental Systems.* "Undoubtedly the ultimate element of the social organism is the individual man—but between the individual and the whole, there are various smaller organisations, various systems of a less complex composition, which severally play their distinctive parts in the life of the whole. These minor groups are, in the strict sense, elements of society, each having its specific tendencies, opinions, desires, passions, which combine or conflict and so give to the whole in which they are united an aspect of unity or of incoherence, according to the nature of their mutual relations. In psychology we find secondary combinations of an analogous kind—syntheses of simpler elements, entering in their turn into the composition of higher syntheses, and into the general life of the mind."[1] The same man belongs at once to his political party, to his church, to his family, to his club, to his trade or profession and so forth. He is thus connected with a multiplicity of separate social groups, each having its own distinctive aim and function and its own appropriate mode of organisation. To each of these distinct social relations there corresponds in his own mind a distinct group of psychical elements. These are subordinate components of his general mental organisation just as the various minor social systems are subordinate components of the general organisation of society. Similar mental groups tend to grow up in connexion with each of the special aspects of his experience. To understand the meaning of a word, to identify, or classify a perceived object, to plan a consistent course of action—are all mental processes which involve the existence of groups of ideas, having severally a certain systematic unity.

The analogy between mental and social organisation may be carried further. In so far as a man actually participates in the special activity of any one of the social systems to

[1] *L'Activité Mentale*, par M. Paulhan (see MIND xiv. 579). Most of the illustrations given in this § are borrowed from the same source.

which he belongs, he is for the time being debarred from taking part in the special activity of the other co-ordinate systems, as well as from asserting his own independence. Brutus in his office of magistrate ceases to be a father. In like manner, mental elements which share in the activity of one mental system are for the time disabled from acting either in any other systematic combination or independently. When we are engrossed in writing or speaking about some serious topic, it does not occur to us to make puns in the words we use. When we are interested in a game of billiards, the idea of the billiard balls, does not set us thinking about the trade in ivory and African slavery.

On the dissolution of a mental system, whether brought about by pathological conditions or otherwise, its several components begin in their isolation to display the tendencies, which their combination had suppressed. Mental anarchy in this respect resembles social anarchy. When a social organisation is broken up, its component groups or its component individuals do severally what is right in their own eyes. So too, when a mental organisation is dissolved, its elements become free to act independently. Aphasic patients for whom language has ceased to be an instrument of thought, sometimes show a strong tendency to string words together in a connexion determined merely by alliteration, assonance, &c. In certain phases of the hypnotic trance and in some other pathological states, mental systems act in abnormal isolation from each other, giving rise to beliefs and conduct which would be impossible to the subject in his normal condition. Similar results may be brought about in manifold ways. The inverse happens when a number of groups which have previously existed in relative detachment from each other become combined in systematic unity. The action of each becomes limited by their union, as the liberty of individuals is restricted by their combination in an organised society. Thus Darwin's passion for miscellaneous collecting became restricted in its range when it was subordinated to a great scientific purpose.

§ 4. *Apperception.* Under the term Apperception are included all such processes as understanding, interpreting, identifying, subsuming, &c. These processes have one feature in common. A presentation, which is understood, interpreted, identified or classified, is thereby set in a certain relation to the mental preformation, as this has been organised in the course of previous experience. It enters into

systematic connexion with other constituents of the mind. Apperception may therefore be defined as *the process by which a mental system incorporates or tends to incorporate a new element.* It is necessary to introduce the words "or tends to incorporate," in order to cover the cases in which an unsuccessful attempt is made to identify, classify, interpret, &c. In almost every moment of waking life an apperceptive process is taking place Every presentation which is attended to is also apperceived. There is in the mind some appreciation of its special significance in a practical or theoretical point of view. The effect of attention is to a great extent dependent on the apperception, which accompanies it. Those aspects of the presentation attended to, which are congruent with the appercipient system, acquire special distinctness. Others pass unnoticed. The physician will at a glance detect in a patient symptoms which have escaped the anxious scrutiny of friends and relatives. The reason for this does not lie in his superior power of concentrating attention. He is able to note what they fail to note, because in his mind an apperceptive system has been organised, which they do not possess.

As vital process comprehends in a higher synthesis physical and chemical changes, so the systematic activity which we call apperception comprehends in a higher synthesis the elementary processes of Association, Fusion, Conflict, &c. Apperceptive activity is constituted by a systematic combination of these elementary processes. No psychology can be adequate which takes account of the processes, without taking into account their systematic co-ordination. To explain the concrete working of the mental organism merely by reference to the laws of Contiguity and Similarity is like explaining the action of a complex machine merely by reference to the abstract formulas of Mechanics, or like explaining the way in which a house is built by merely stating the mode in which one brick is cemented to another. English Associationism has to some extent erred in this direction. It is therefore important to bring into prominence such doctrines as the Herbartian theory of Apperception and M. Paulhan's substantially identical theory of Systematic Association.

§ 5. *Attention as aiding Apperception.* Attention is a process auxiliary to apperception. The act of attending may be compared to the act of prehension by which an animal seizes and retains its prey until it has consumed it. The movement of attention fastening upon the presentation to

be apperceived,[1] fixes it in the focus of consciousness, until the appercipient system has finally succeeded or failed in assimilating it.

The part played by this auxiliary motor process is best shown by a comparison of the cases of apperception in which it is absent with those in which it is present. As a rule, it is brought into play only when the incorporation of a new group of mental elements by a preorganised system is to a certain degree, resisted and retarded. Attention then helps to overcome the obstruction. By intensifying the apperceived presentation it intensifies and prolongs the apperceptive process. On the other hand, when through habitual exercise an organised system of psychical elements has become so preconformed to a special class of familiar experiences, that it assimilates them with a certain degree of ease and rapidity, apperception may dispense with aid from attention. Attention is less useful in proportion as the preadjustment of the mental organisation is more nearly perfect. In some cases its intervention would be a positive hindrance instead of a help, because the act of attending would occupy more time than the apperceptive process occupies by itself. In some instances attention is not only useless, but impossible. The apperceptive process is finished before the act of attending can begin.

The formation of a perceptual complex by the apperception of sense-impressions always takes place sub-consciously, except in the early stages of mental development in which we are still learning to apprehend sensible things by means of sight, touch and hearing. In the relatively developed mind the whole process takes place with so unfailing a celerity and facility that there is no occasion and no opportunity for the interposition of attention. The final product of this process may become focused in consciousness by entering into relation with a more comprehensive mental system, which strives to incorporate it, but which can only do so, with comparative slowness and hesitancy. But the apperception by which the percept is formed is in all its stages independent of the movement of attention and does not under ordinary conditions admit of its intervention. All secondarily automatic actions, which involve in any degree free adaptation to varying conditions, depend on apperception dissociated from attention. These apperceptive processes differ for the most part from those which result in the

[1] This it may do, as we shall see in the sequel, either directly or indirectly through the mediation of a word or other analogous sign.

formation of a percept, inasmuch as they do not exclude the possible interposition of attention. They even require and, *ceteris paribus*, induce it, so soon as the actions which they control and guide, become complicated beyond a certain point, or involve adjustment to unusual circumstances. Such actions then cease to be automatic and unconnected with the main stream of conscious life. We may under ordinary conditions thread our way through a throng of people, while our attention is preoccupied by a train of abstract thought. The guidance of our movements depends on the successive apperception of a series of presentations which escape our notice. If however, an unusual obstacle confronts us, it is likely to strike our attention—even before we come into physical collision with it. We may perform co-ordinated movements of this kind either automatically or with full consciousness, according to the nature of the apperceptive groups which combine to determine and control their execution. Thus I may throw stones at a mark without any assignable motive, except that the stones are easily within reach and the mark conspicuous. In this case I shall probably not attend to what I am doing, except in a faint and intermittent way. I may even be at the moment talking or thinking about an altogether disconnected topic. If, however, someone has made a bet with me that I shall miss, the case is altered. The apperceptive system which constitutes my estimate of my own powers and my estimate of the opinion of others concerning my powers, is then brought into play. If I represent myself as about to succeed, this apperceptive system tends to become modified in a particular way. But the ideas which correspond to the alternate possibility of my failure, even though they remain sub-conscious, obstruct the apperceptive process. Hence I attend carefully to what I am doing. I note the weight and form of the missile, the size and distance of the mark, the direction of the wind, &c. It would be easy to multiply similar instances exhibiting the general nature of the conditions, under which apperception is accompanied and assisted by attention. It will here be sufficient to adduce one more illustration, which by reason of its simplicity may be conveniently regarded as typical. We do not, as a rule, expressly attend to the personal appearance of familiar acquaintances, although we show by our words and actions that we recognise them when we meet. If however, any unwonted change has taken place in them, we are very likely to notice it. If, contrary to their previous custom, they

have begun to wear glasses, if they are paler than usual, or if their voice is altered, we are struck by the novel circumstance, and in consequence attend to it. This means that the novelty, being in conflict with our preformed ideas, obstructs apperception, and so occasions a motor activity by which the apperceived presentation is invested with predominant intensity and distinctness.

The more important and extensive is the modification which a preorganised system undergoes in the act of incorporating a new element, the more likely is this new element to attract attention. Now, *ceteris paribus*, the more complex and comprehensive is the system, the more liable it is to undergo frequent and important modifications. A small group of psychical elements moulded by, and adapted to a narrow circle of experiences, may easily become fully organised, so as to require no further readjustments, except such as have been rendered by custom in a high degree facile and rapid. On the other hand, a very complex and extensive group adapted to very complex and variable experiences, can never become so perfectly organised. Owing to the multiplicity of its constituents and the intricacy of their interconnexion, it can hardly fail to offer resistance at some point or other to the assimilation of new elements. It follows that a presentation is, *ceteris paribus*, more likely to command attention in proportion as the system by which it is apperceived is more comprehensive and complex.

We have now considered the general conditions which determine, whether, when an apperceptive process is taking place, it shall or shall not be accompanied by attention to the apperceived presentation. We have not as yet discussed the conditions which determine whether an apperceptive process shall or shall not take place. This depends, as we shall see in the following §§, on the co-operation and competition of different apperceptive systems.

§ 6. *Co-operation and Competition of Apperceptive Systems.* In so far as the mind is a unity, it tends to become affected as a whole by changes taking place in any of its component elements. For this reason an appercipient system tends to excite other systems in a degree varying directly with the intimacy of its connexion with them. The apperceptive activity of one group communicates to others a wave of excitation by which they are prepared to become in their turn appercipient. They are by this means rendered alert and ready to act so soon as occasion arises. This process by which an ideal group in the exercise of its apperceptive

function prompts others to a similar activity, is what I call the *co-operation* of mental systems.

On the other hand, every ideal group in the exercise of its apperceptive function tends to debar all other groups from becoming appercipient, excepting such as are at the moment capable of combining with it in the same systematic activity. This follows, in part, from the very nature of an apperceptive system. Elements which are united in the same apperceptive process, are *ipso facto* disabled, for the time being, from taking part in any other. Otherwise the word *system* would have no meaning. An ideal group cannot, therefore, become appercipient, if some of its essential constituents enter also into the composition of a different group which is in full action at the time. Another ground of competition between ideal systems is to be found in the quantitative limitation of the total mental activity in each moment. In proportion as mental energy is engrossed by one group, other groups are enfeebled. If in the course of our thoughts we come upon some topic of extraordinary interest, we often suspend even the automatic movements which depend on apperceptions disconnected with the main stream of mental process, we cease walking or let our cigar go out.

The nature of co-operation and of competition may be illustrated by the interaction of co-ordinate groups, which are subordinated in an analogous manner to a single comprehensive system. A system so organised may apperceive in a twofold way according to the nature of the apperceived presentation. It may assimilate the new element in a general manner without incorporating it in any one of the subordinate groups. On the other hand, the new element may by the same act be incorporated in the total system and in one of the sub-groups. I may see that an object, at a distance, is a bird, without being able to discern what kind of bird it is. In this case the object is apperceived by the class-group, represented by the term, bird. But it is not apperceived by any of the minor groups, represented by the terms—thrush, blackbird, &c., except in so far as these necessarily take part in the systematic activity of the whole to which they belong. When the object approaches nearer, I may be able to discern not only that it is a bird, but that it is a thrush. This means that it is apperceived by one of the co-ordinate sub-groups to the exclusion of the others. It is incorporated not only by the total appercipient system, but by a specialised portion of that system. The co-ordinate sub-groups compete with each other because they can exercise their distinctive functions only in exclusive alternation. They co-operate with each

other because they are all integral parts of one system. Each of them in so far as it shares in the general excitation of the whole in which it is contained, become prepared to play its own proper part so soon as occasion arises. Thus, when I see the bird in the distance, the various sub-groups, corresponding to different species of birds, become excited and the excitation of each sustains and heightens that of the rest. Each is on the alert to exercise its special apperceptive function, to the exclusion of the others.

A peculiarly instructive illustration of the co-operation and competition of co-ordinate sub-groups is to be found in certain experiments of Münsterberg on reaction-time, of which a general account was given in MIND No. 58. The subject of these experiments knows beforehand that he will hear in irregular order names of persons or things belonging to one or other of five classes,—*e. g.*, poets, musicians, men of science, philosophers, and statesmen. He is however entirely ignorant what particular names will be from time to time selected. The special groups corresponding in his mind to Byron, Kant, or Kepler, become appercipient at the time when the name strikes his ear and not before. But these groups are already in a state of incipient excitation in as much as they have been to some extent involved in the general activity of the class-system to which they belong. Hence they are prompt to apperceive[1] when their turn comes. The importance of this preparatory process is shown by the result of the experiments. The subject reacts by lifting one of his five fingers and he lifts a different one according to the class to which the person named belongs. One finger is raised for a poet, another for a musician, and so forth. Now Münsterberg shows that the preliminary processes intervening between the reception of the impression and the appropriate reaction which they determine may take place sub-consciously and that when they do so they occupy a very much shorter time. When conscious identification precedes the raising of the finger the whole duration of the reaction-time may be more than doubled. This must imply that the incipient excitation of the groups through which identification takes place, renders them so prompt to apperceive and so energetic in their action that they need no support from attention, but are on the contrary merely delayed and impeded by it. Similar examples of the co-operation of mental systems are con-

[1] We apperceive a word when we connect it with its appropriate meaning ; although as I shall have to point out later on, these apperceptions are of an exceptional kind.

stantly occurring in ordinary experience. A person of a religious turn of mind is prepared for devotional exercises merely by entering a church. Another with a superstitious bias is predisposed to see ghosts by the mere presence of darkness and solitude. If I meet with a Latin word in reading a Latin book, I am not misled by its accidental likeness to an English word, as I might be, if I came upon it casually and unexpectedly. In a printing establishment the term "proofs" is likely to receive a different interpretation to that which would be attached to it in a polemical discussion. In such cases the apperceptive activity of a comprehensive system maintains each of its component sub-groups in a state of readiness to apperceive presentations with which they have special affinity. Co-operation is strongest and most effective between groups, which are thus interconnected according to an articulate plan as co-ordinate parts of a highly organised whole. But it also takes place between all groups which enter into the composition of the empirical self, in a greater or less degree, according to the greater or less intimacy of their interconnexion.

Competition is a trial of strength between competing systems. Co-operation is one of the main conditions on which their comparative strength depends. In so far as an appercipient system transmits a wave of excitation to other systems it strengthens them even against itself. It follows that, *ceteris paribus*, the power of an ideal group to compete with others increases as the degree in which it co-operates with them diminishes. In cases like those presented by M.'s experiments, co-operation is the predominant condition determining the comparative strength of competing sub-groups, and it affects these sub-groups in an approximately equal degree. Hence the reason why one becomes appercipient in preference to the others lies mainly in its greater affinity with the presentation to be apperceived. But co-operation is by no means the only circumstance on which the power of an apperceptive system depends. In the following § we shall have to consider a number of other conditions determining the comparative readiness, energy, and persistence with which different ideal groups exercise their apperceptive function. These conditions combined with the influence of co-operation determine, *ceteris paribus*, which of a number of competing groups shall succeed in becoming appercipient. When a plurality of objects, each having exclusive affinity with a different system of ideas, are simultaneously presented to the senses or suggested by the train of association, that

presentation is apperceived, which is congruent with the most powerful system. Similarly when the same presentation is capable of being incorporated by different systems, the strongest of them apperceives it. If they apperceive it in turn they do so in the order of their relative strength. We have now to indicate the conditions on which this difference in the power of ideal systems depends.

§ 7. *Conditions determining the strength of Apperceptive Systems.* These may be either extrinsic or intrinsic. The intrinsic conditions are inherent in the constitution of the system itself. The extrinsic consist in passing circumstances which from time to time favour its activity. Among these latter are included :—(1) The co-operation of another system ; (2) The recency or (3) The intensity of its own previous action ; (4) The influence of organic sensation ; (5) Its own freshness arising from previous repose. The intrinsic conditions are :—(1) The comprehensiveness of the system ; (2) Its internal organisation ; (3) The strength of the cohesion between its parts ; (4) The nature of the sensory material which enters predominantly into its composition.

I have already treated of the influence of co-operation and I shall have more to say concerning it in § 8. Its effect is greatly modified by other conditions. Through it apperceptive groups are stimulated to become appercipient ; but they respond to the stimulus only in so far as they are excitable and their excitability depends on other causes.

An apperceptive system is, apart from fatigue, more prompt to apperceive the more recently it has been brought into play. *Ceteris paribus* the ideal group which is appercipient in one moment will also be appercipient in the next. Being already in action, it tends to continue in action. Competing groups find it in possession of the field and they have to dispossess it, before they can take its place. Further, the state of excitation into which a system is thrown by the exercise of its apperceptive function, tends to persist afterwards. It is only by a gradual process that the system sinks into its previous condition of comparative inertness. When we are absorbed in the consideration of some interesting topic, any circumstance which diverts our attention from it usually occasions only a transient interruption. So soon as the disturbance ceases, our thoughts pursue their former course, as if they had never been arrested in it.

The effect of intensity is ordinarily most conspicuous, when it is combined with that of recency. An apperceptive group which has been both recently and intensely excited is apt to assume for some time a tyrannical predominance over competitors otherwise more powerful than it is. We all know how difficult it is to dismiss from our minds permanently and completely a subject about which we have recently been very much excited. A game of chess which has roused a keen interest in us, is likely for some hours afterwards to recur to our thoughts, even in the midst of more important occupations. Certain pathological cases furnish very striking instances, in which the effect of intense excitement is greatly exaggerated and prolonged —sometimes permanently. "A lady frightened by robbers takes all men she sees for brigands who means to assassinate her; another having seen her child knocked down by a horse cannot be persuaded that it is living by any arguments or even by the sight of it, although it is quite well." [1]

The influence of the coenæsthesis on the relative strength of apperceptive systems is of fundamental importance. The ideas connected with the satisfaction of an organic need commonly assume exclusive predominance so soon as the corresponding organic sensation is felt with a certain degree of intensity. The pangs of hunger will ordinarily cut short the most absorbing train of abstract speculation. The influence of varying modifications of the coenæsthesis is however, by no means confined to simple cases of this kind. It pervades our whole mental life. Every specific kind of emotion is accompanied by a characteristic mode of organic reaction. The resulting systemic sensations form a most important constituent of the emotion itself and they become intimately associated with the apperceptive system which is dominant when the emotion is felt. A recurrence of a similar organic state, from whatever cause it may arise, will tend to re-excite in mass the whole mental system with which it has thus become coherent. The most striking illustrations of this point are to be found in the psychological effects of sexual excitement. For an excellent discussion of this topic I refer the reader to M. Paulhan's book, pp. 458-476. The emotion of fear is accompanied and in part occasioned by certain disturbances of the heart's action, of respiration, &c. The occurrence of somewhat similar disturbances in sleep will give rise to terrifying dreams.

[1] *L'Activité Mentale*, p. 72; M. Paulhan gives many other illustrations.

In waking life they may give rise to anticipations of danger and disaster which would never have been entertained in a state of sound health. In like manner, a low condition of body may colour our whole view of our own circumstances, actions and prospects. It may cause us to regard our past life as a failure and our future as full of difficulty. On the other hand a vigorous state of health favours hopefulness and self-complacency. In early stages of mental evolution, the relative strength of apperceptive systems depends almost entirely on organic sensation. The first differentiation of the mind into distinct systems depends on the existence of distinct practical needs. As mental development advances, other conditions acquire increasing importance.

The comparative freshness of an apperceptive system often renders it more excitable than others which are in other respects more powerful or equally so. Prolonged activity occasions fatigue and necessitates a period of inaction, which affords an opportunity for fresh groups to become appercipient. We all know by familiar experience how much we stand in need of recreative change. The more complete the change, the more effective it is. A system enjoys adequate repose only when it is displaced by others which do not subexcite it too strongly by co-operation. Otherwise it is like a man in troubled and unrefreshing sleep. It continues to be indirectly excited and therefore indirectly fatigued. The recurrent effect of fatigue is noticeable even in the course of what is ordinarily called a continuous train of thought. Transient intermissions of activity become from time to time necessary during which the mind momentarily wanders to other topics. Short intervals of comparative repose restore the excitability of the apperceptive system which then reassumes its predominance —a predominance due in part to the very intensity and recency of the activity which gives rise to fatigue.

We must now consider the way in which the strength of apperceptive groups is determined by their own internal constitution. The excitability of a system of psychical elements depends very largely upon the degree of its inward organisation. It is more easily stirred to activity, as a whole, the more rapidly and completely the excitation of any one of its components spreads to the rest. Now the rapidity of diffusion within the system varies according to the general plan of combination interconnecting its constituent parts. The more manifold are the relations by which each element is united with all the rest, the more completely, rapidly and certainly will the whole become implicated in the activity of the part.

This condition is best fulfilled by a symmetrical scheme of interconnexion such that co-ordinate sub-groups bear a similar relation to each other, and to the whole, and are themselves composed of minor groups combined according to an analogous plan. We may adduce as an instance of a system organised in this manner, the philosophy of Hegel as it exists in the mind of the genuine Hegelian. The dialectic process constitutes a general form of relation, which permeates the entire system determining the connexion both between its most comprehensive divisions and between its most specific details. Each part of the whole has a formal affinity with every other, and it is therefore psychologically coherent with every other. Each is thus a psychological, as well as a logical, centre and rallying-point for the total system. I have adduced this example, because it seems to be a specially striking one. But every logical system possesses a similar psychological character in a greater or less degree, in proportion as it approaches more or less perfectly to the logical ideal.

The power of an apperceptive system depends on its comprehensiveness as well as on its organisation. A group of political or religious prejudices unconnected by any logical principle of union may derive predominant strength from its mere massiveness. The lack of articulate plan is compensated by the number of the elements which combine to excite and sustain each other. We must also take into account, besides the number and logical interdependence of the components of a system, their mutual cohesion as established by habitual association. This depends upon the frequency with which the system is brought into action.

Finally, we must take into account the comparative excitability of ideas derived from different senses. MM. Charcot and Ballet, following a clue given by Galton, have made us familiar with the classification according to which different persons are ranked as visuals, or audiles, or motiles. The visuals are those in whom visual presentations are most easily and vividly reproducible. The audiles are those in which presentations of sound are predominant. In the motiles, reproductions of muscular experience have the greatest importance. These distinctions have an important bearing on our present subject. The dominance of a special mode of sensibility gives an advantage in the struggle of competing systems to those in which sensory presentations of the dominant kind play a prominent part. Great engineers are likely to be visuals, great musicians audiles, and so forth.

§ 8. *Conflict of Systems.* An appercipient system may meet with more or less resistance in the effort to incorporate a new element. This resistance may merely delay the process of assimilation, or it may effectively arrest it. It is convenient to distinguish these two cases according to their result as *positive* and *negative* apperception. In positive apperception a mental system actually succeeds in absorbing a new element; in negative apperception the effort to incorporate a new element is defeated. We have now to distinguish between the kind of obstruction which merely delays positive apperception from that which effectively prevents it from taking place. A system can positively apperceive elements which differ from its component sub-groups only in those respects in which they differ from one another. Thus, I recognise an animal as a bird, when it presents a certain general type of structure under special modifications varying from those characteristic of known species of birds in a manner analogous to that in which these vary from each other. Similarly, change in an individual person or thing does not debar identification so long as the alteration is of a kind and degree with which we are familiar. It may also happen that an altogether unprecedented variation fails to present an effective obstacle to the process of assimilation. I may recognise a black swan as such, although I have never seen or heard of any that were not white. In this and similar cases we are accustomed to say that the variation is unimportant, or unessential. For psychology, this means that the divergent feature has no systematic connexion with any conflicting group of mental elements, sufficiently powerful to inhibit the activity of the appercipient system.

Conflict of systems takes place when one system in assimilating a new element tends to wrest it from its preformed connexion with another system. Positive apperception by the one system implies the disintegration of the other. The latter resists the apperceptive process, simply because it tends to maintain its own existence against destructive forces. In order that conflict may take place the system which is to resist the apperceptive process must be in some degree excited. Under favourable conditions it may be sufficiently excited by co-operation based on the same connexion between the two systems, which gives rise to their conflict. The apperceived presentation forms a link between them through which excitation is transmitted from the one to the other. We must however bear in mind that the effect of co-operation varies according to circumstances.

A group will be more or less excited by co-operation according as it is, for other reasons, more or less excitable at the moment. In this way we can account for the unconscious inconsistencies into which men fall in their mode of thinking and acting. What a man says and believes in the heat of polemical discussion may be very different from what he says and believes in a cool moment. Yet he may never be aware of the discrepancy until he is unpleasantly reminded of it by some one else. Similarly a person's opinions under the influence of an imposing religious ceremony, may vary considerably from those which he entertains in pursuing a scientific or critical research. It is quite conceivable that a professor of anatomy who is also a devout Roman Catholic, may pay veneration to what are alleged to be bones of saints, although his scientific knowledge would constrain him to identify them as the bones of animals.

In cases of this kind the two systems which might conflict and do not, are, usually disparate and disconnected. The points by which they conflict may be almost the only points of community between them. Hence the strength with which they compete is altogether out of proportion to the strength with which they co-operate. Thus the one may easily exclude the other from playing its appropriate part. This can hardly happen when both are co-ordinate sub-groups in a highly organised system.

Conflict itself heightens and sustains the co-operation of the conflicting systems. Each becomes excited by the very effort to acquire or retain the element which forms the subject of their contention. When their strife is prolonged each becomes appercipient in turn. The same topic is considered alternately from incompatible points of view.

The result of the conflict varies according to circumstances. It may issue either in positive or in negative apperception after a transient struggle. If the appercipient system is very much more powerful than its opponent, it will speedily conquer by sheer force. This happens when we unhesitatingly entertain a belief in spite of unsolved difficulties. On the other hand, the appercipient system may speedily encounter so strong a resistance that the apperceptive process is at once arrested. Thus in looking for a particular key in a bunch, I may reject one after another without hesitation until I come to the one I am in search of.

In the third place the issue of the conflict may remain permanently in suspense; instead of a decided result, positive or negative, there may be an unending process of mental oscillation between the two. This happens when we are

permanently unable to make up our minds upon a doubtful question. Again, suspense and vacillation may come to an end in consequence of a series of intervening processes by which one or both of the antagonistic systems becomes so modified that the conflict between them ceases. This may happen in at least two ways. The modification may be of such a kind, as to make it possible for the element which occasions the strife between the two systems, to become incorporated in both of them without further struggle. On the other hand, the ultimate decision may be brought about by a relative increase in the strength of one of them, which is thus enabled to prevail over its opponent by superior force. The "conflict between religion and science" supplies illustrations of both these alternatives. The study of modern science may disturb a man's belief in the literal inspiration of the Scriptures. If his social surroundings, the general character of his pursuits, &c., are such as to confirm his preformed theological tendencies, he will probably, in the long run, "stifle doubt". He may continue to study geology and biology, but he will cease to connect them with the history of creation as contained in the Book of Genesis. On the other hand, if both systems of ideas are strongly developed and favoured by the circumstances of his life, he will probably reconcile them by modifying one or both in an appropriate manner. He will take a broader view of the nature of inspiration; and wherever science seems to leave open a possible choice between alternative hypotheses he will select those which accord best with his theology, even though they would not otherwise appear to him the most plausible.

§ 9. *Suggestibility.* The normal working of competition, co-operation and conflict, may be admirably illustrated by contrasting it with a certain pathological state in which these processes are more or less completely in abeyance. The pathological state to which I refer is called suggestibility. It accompanies certain phases of the hypnotic trance and it is frequent in hysterical patients. In the mind of a suggestible person, apperceptive systems are excited almost wholly by the commands, words, gestures, &c., of another person—and not by their own mutual competition and co-operation. It follows that conflict also is almost absent except in so far as conflicting groups are simultaneously excited by suggestion. Hence arises the possibility of all kinds of strange hallucinations and delusions. In proportion as a subject is suggestible, he is incapable of spontaneously finding difficulties or inconsistencies to interfere with his belief, in what would,

under normal condition, appear to him to be the wildest vagaries of imagination. If he is told that he is the Emperor of China, he straightway proceeds to act and speak as if he were so, without any misgiving. A voyage to the moon will present no more difficulty than the most commonplace incident. If he is told that he is making such a voyage, or has made it, he will accept the suggested situation as if it were real; he will act and speak as if he actually were in a balloon, leaving the earth beneath him. He will then represent the journey as completed and will proceed to discuss the difficulty of returning. This difficulty he can appreciate, because it arises from a conflict within the limits of the total system which is already excited by suggestion. But the general impossibility of the situation never strikes him at all. With the exception of the dominant system the constituent elements of the mind are inoperative. This dominant system exercises an unlimited tyranny. Surrounding objects stimulate the senses, but they fail to call into being any percepts save those which are congruent with the reigning group of ideas. The external stimulus is incapable of suppressing images having their source in suggestion, and of substituting others in their stead. Whatever in the environment is incompatible with, or even irrelevant to, the suggested train of ideas escapes notice as if it were non-existent. Sensory stimulation, instead of interfering with suggestion, becomes auxiliary to it by giving sensuous vividness and definite localisation in space to suggested images. I, of course, refer to hallucinations with *point de repère.* A hypnotised patient is told that a particular person is photographed on a certain blank sheet of paper. She sees the photograph distinctly and localises it definitely and consistently on the surface of the sheet of paper referred to. Double vision of the paper, produced by a prism placed before one of her eyes, is accompanied by double vision of the photograph also. When the paper is mixed with others, apparently similar, she can discriminate it from the rest and she then sees the photograph on it and on it only. Probably most hallucinations have *points de repère* of this kind from which they derive vividness and definite localisation.

In conclusion it must be pointed out that some degree of suggestibility is a general accompaniment and manifestation of mental weakness, whether arising from imperfect development or from disorganisation due to disease or to drugs. A young child is more or less suggestible because its mind is unformed. The mental systems which in the adult resist suggestion are in it as yet too feeble to do so. A

drunken man is suggestible because in him apperceptive systems act in abnormal isolation. This is shown by the fact that in his intoxicated state he says and does what in his sober moments he would be incapable of. He becomes powerless to resist temptation, because restraining considerations are inoperative. A healthy condition of mind is characterised by a general excitability of all the mental systems composing the empirical Ego, which enables them to co-operate, compete and conflict with a comparative strength simultaneously determined by all the conditions enumerated in § 7.

§ 10. *Conditions determining the Train of Ideas.* Attention, being a motor process, depends on feeling. We attend only to what in some measure pleases or displeases us. This dependence of attention on feeling cannot be separated from its dependence on apperception. Feeling is an accompaniment of the general wave of excitement which a presentation produces within the mind as a whole. Under ordinary conditions this general wave of excitement takes the form of an apperceptive process which indirectly stimulates non-appercipient systems by co-operation. Apperception is a condition determining attention only in so far as it is a condition determining feeling. The special function of feeling regarded from the point of view of the psychological mechanism, is to give unity to mental process. It is a simple mode of consciousness resulting from the excitement of a multiplicity of elements, and it causes attention to be concentrated on the central presentation from which this wave of excitement is radiated. The presentation thus singled out by attention, as directed by feeling, serves as the unifying focus of mental activity at the moment.

The word *interest* includes all that is meant by apperception combined with the pleasant or unpleasant feeling, which is its concomitant. The movement of attention is from moment to moment determined by the interest of the presentation attended to.

We must now investigate the conditions which enable a presentation to excite interest. These conditions are, of course, to a large extent coincident with those which determine the comparative strength of apperceptive systems at any moment. But there is another circumstance to be considered. We must take into account not only the comparative strength of apperceptive systems, but also the comparative intensity of the presentations which tend to excite them. The direction of attention is guided coincidently by

the working of two sets of conditions :—(1) By the relative excitability of different apperceptive groups ; (2) By sense-impressions and by preformed associations between prior and subsequent links in the train of ideas. The relative importance of these co-operating conditions may vary greatly. A sense-impression may sometimes appear to command attention by its mere violence, or the succession of presentations in the focus of consciousness may in certain cases seem to be almost wholly determined by the strength and intimacy of the associations which link together the sequent parts of the series *inter se*. But subjective selection determined by the preformed organisation of apperceptive systems and by the conditions which at the moment favour or retard their activity, is never wholly inoperative and as a rule it plays a conspicuous part. Among competing sense-impressions the movement of attention, *ceteris paribus*, singles out those which are most interesting,—*i.e.*, those which tend to produce the greatest amount of change in the most excitable systems. Similarly, when one presentation a tends by association to revive simultaneously x, y, z, the selection of any one of them, x, in preference to the others, depends, *ceteris paribus*, on the special significance and interest of x. Association and sensory stimulation bring into the field a limited number of rival claimants, each of which, so to speak, solicits attention. The decision between their respective claims depends on the comparative excitability of the apperceptive systems with which they are severally congruent. It depends also on the nature and degree of this congruence. If a presentation is so conformed to an apperceptive system, that it can be assimilated with a certain degree of facility and rapidity, apperception will as we have seen in § 5 take place without aid from attention. The mental excitement accompanying the process is too feeble and evanescent to occasion a degree of pleasant or painful feeling capable of determining the motor process by which presentations are focused in consciousness. The likelihood that apperception will be accompanied by attention is greater in proportion to the want of congruence between the appercipient system and the apperceived presentation. On the other hand the likelihood that apperception will take place at all is, *ceteris paribus*, dependent on the degree of congruence. A presentation may fail to be apperceived by a dominant system simply because it has not sufficient affinity with it.

In so far as the movement of attention is determined by associations between each presentation attended to and

its successor, the ideas which in turn occupy the focus of consciousness form a connected series or *train*. We have in the ensuing § to consider the distinction between a mere train of ideas and a train of ideas which is also, in a strict sense, a train of thought.

§ 11. *Thought and Association.* When in a train of ideas A calls up B by association, it may happen that A excites interest and attracts attention because it calls into play an apperceptive system disparate from that by which it was apperceived. This is mere "play of association" as opposed to methodical thinking. It is what Hobbes calls "ranging". In idle reverie our thoughts are apt to range or ramble from one topic to another, guided only by casual connexions of ideas. Transitions of this kind are specially characteristic of weak and untrained minds. Disciplined thinking, on the contrary is marked by continuity of interest. A train of thought is a train of ideas each of which is in turn apperceived by the same persistently dominant system. In discussing 'suggestibility,' we had occasion to consider the tyrannical supremacy, which a mental system may acquire simply because other systems are unexcitable and therefore unable to compete or conflict with it. The persistent dominance of the system which gives unity to a train of thought, is of quite a different nature. It is an effect, not of the abolition of competition and co-operation, but of their full and unimpeded exercise. The dominant system prevails over others, equally favoured by the working of association and by sensory stimulation, merely because it is more comprehensive, better organised, &c., than its competitors. The general excitability of the other elements, which compose the mind, as determined by conditions of this kind and by co-operation, remains unimpaired. There is therefore nothing to hinder the conflict of systems. Indeed conflict becomes more frequent and more intense in proportion as thought is more sustained and strenuous. This will be better understood when we have considered the nature of thought more fully.

For the existence of a train of thought it is necessary that the same mental system shall apperceive in turn the presentations which successively occupy the focus of consciousness. But this is not in itself sufficient. Reverie as well as thought may admit of the persistent dominance of the same apperceptive system. It is possible that our ideas as they successively emerge may all have reference to the same general topic and yet they may not be so connected

with each other as to form a train of thought. The ruins of an old castle may carry our minds back into the past, so that our fancies and reflections all have more or less reference to feudal manners and customs. Nevertheless we may wander from point to point in a very desultory manner. In so far as this is the case, there is no thinking in the proper sense. There is only *ranging* within certain broad limits. There is no thinking when and so far as the interest of each successive idea of the train is independent of the relation which constitutes the associative link between it and its predecessor. In mere ranging these relations are not apperceived and in consequence are not attended to. They serve as transitions from one term in an ideal series to another, without appearing in clear consciousness as integral parts of the series. On the other hand, the essential characteristic of a train of thought is that the relation linking each idea to its predecessor forms also a source of the interest through which it attracts attention. In so far as this is the case, the connecting relation itself becomes an object of consciousness; each presentation appears as a further modification or development of its predecessor instead of merely extruding it in an order of exclusive succession. This is what happens when the sight of a ruined castle leads us to recall or to reconstruct its past history, having regard to chronological order and the natural sequence of events.

§ 12. *Proportional Systems.* We have in the preceding § defined the distinction between a mere train of ideas and a train of thought. We must now proceed to consider the ground of this distinction. The essential point to be taken into account appears to be the mode and degree of organisation of mental systems. The affinity connecting co-ordinate sub-groups may be predominantly of a formal kind. It may consist in a pervading analogy of the plan of interconnexion according to which the constituent elements of the several sub-groups are united *inter se*. Thought depends on mental systems constituted in this manner. We may conveniently designate them by a term borrowed from the philologists,—as *proportional* systems. The Hegelian philosophy as it exists in the mind of the Hegelian, is, as we have seen in §7, a signal instance of this mode of mental organisation. But in all normal human minds which have reached a certain degree of development there exist systems approximating more or less to the same type. Whoever has learned in any degree to apprehend geometrical or numerical relations as such, has developed a proportional system—a system adapted to apper-

ceive objects in other respects most diverse from each other, merely because they agree in being capable of entering into certain relations. The pressure of practical needs gives rise even in early stages of mental growth to systems which are to a great extent proportional in their constitution. The special lines of action by which on different occasions we realise the same end, may vary according to circumstances. But these different ways of doing the same thing for the most part correspond in broad outline although they differ in detail. This correspondence is of a formal or proportional kind, because it consists in a certain common scheme of relation connecting the different lines of action with the one end. Variations which do not affect the common relation are unimportant.

Thinking as distinguished from association involves the activity of a proportional system as such. Suppose that such a system S is composed of a plurality of subgroups $a\ b\ c\ d$, $a'\ b'\ c'\ d'$, $a''\ b''\ c''\ d''$, &c., in each of which the component elements are combined according to a certain general type of interconnexion R, so that $\frac{a}{b} = \frac{a'}{b'}$ &c. Suppose, now, that a new group, $a^n\ b^n\ c^n\ d^n$, is apperceived by S. This means that its components are presented as connected according to the general scheme R, so that $\frac{a^n}{b^n} = \frac{a}{b} = \frac{a'}{b'}$ &c. Now the whole cluster, $a^n\ b^n\ c^n\ d^n$, may be apperceived simultaneously. This is what happens in the case of a geometrical figure which is not too complex to be fully recognised at once. Under such conditions there is no train of thought because there is no train of ideas. On the other hand, it may happen that the several elements can only be assimilated in succession. This happens, when failing fully to comprehend the plan of a piece of machinery at the first glance, we have to examine it in detail successively noting the relation of the parts to each other. In this case we are pursuing a train of thought in the proper sense.

§ 13. *Proportional Production.* The apperceptive activity of a proportional system modifies in a special manner the working of the associations by which ideas succeed each other in the focus of consciousness. The general law of association is that a certain mental activity when it is revived in part tends to be revived as a whole. But this general law may operate very differently according to circumstances. If a has been conjoined with b as a constituent of the complex

a b, when a is revived it will tend to complete itself by reviving b. This is association in its simplest form. Now, suppose that instead of a, a^n is presented in the focus of consciousness. There is a partial resemblance between a^n and a. Resemblance, so far as it extends, is for psychology, dynamical identity. Hence a^n, in consequence of its similarity with a, will tend to revive the complex a b. Such transitions are common in mere *ranging* as distinguished from thinking. They are ordinarily adduced to illustrate what is called association by similarity. But the flow of ideas takes a different course when it is controlled by a proportional system. In such a case the nearest possible approximation to a renewal of the total activity involved in the presentation of the whole a b, does not consist in the revival of a or of b, or of both. The whole a b is constituted by a as presented in a certain relation to b. This constituent relation, when it is congruent with the general scheme of interconnexion which pervades and unifies an appercipient system, will be more potent to excite interest and attract attention, than the special character of a or b, which belong to them independently of their combination: a^n will therefore call up, not a or b, but b^n which stands to it in a relation analogous to that of b to a. This modified working of the principle of association is not merely reproductive. I propose to call it *proportional* or *analogical production*. Excellent illustrations of it are to be found in the working of linguistic analogy. This is a subject which I shall have to take up in the following article. I here confine myself to a quotation from M. H. Paul's *Principles of the History of Language* (Eng. trans.), ch. 5:—

"Mere reproduction by memory of what it has once mastered is only one factor in the words and groups of words which we employ in our speech. Another hardly less important factor is the combinatory activity based upon the existence of proportion-groups. The combination consists to some extent in the solution of an equation between proportions, by the process of freely creating for a word already familiar, in the model of proportions likewise familiar, a second proportional member. This process we call formation by analogy." "Sentences like *Rose a nurse of ninety years* associate themselves with others like *Out spake the mighty Appius* · · · and by such associations we get the equation *rose : nurse=spake : Appius*." "The feeling for a particular function associates itself with the outer form of syntactic connexion, and this function then in common with the exterior form constitutes the bond which holds the proportions together." "It is an incontrovertible fact that a quantity of word-forms and syntactic combinations, which have never been introduced into the mind from without, are able not merely to spring into being by the aid of the proportion-groups, but also from this time forward are confidently produced without the speaker having any consciousness that he is leaving the safe ground of what he has learnt."

A clear and simple instance of proportional production is furnished by certain mathematical series. An arithmetical or geometrical progression, when we have fully grasped the law according to which it is formed, gives rise to a proportional group. To the series 1, 2, 4, 8, &c., corresponds an apperceptive system in which the sub-groups are 1 : 2, 2 : 4, 4 : 8, &c. In the development of such a series, each term suggests its successor according to the general form of transition. The identity of relation between successive terms progressively creates new terms different from those which precede. Ideal trains of this kind are strongly contrasted with such simple reproduction as is implied in the mere repetition of a verbal formula learned by rote.

I do not venture to affirm that we can divide all cases of ideal recovery by association into two absolutely distinct classes. Possibly there is no instance of the suggestion of one idea by another in which a strict scrutiny would fail to discover the operation of proportional production. Absolutely simple reproduction is perhaps a fiction in the same sense as a perfectly rigid body or a perfect fluid is so. But it may be in some cases legitimate and convenient to neglect the influence of proportional production on the train of ideas, just as it is sometimes legitimate and convenient in hydrodynamics to neglect the viscosity of a fluid. Thus in dealing with what Prof. Bain calls "routine or use and wont," we may neglect proportional suggestion, whereas for the treatment of intellection and constructive imagination, it is all important.

A comparative anatomist on seeing part of the skeleton of a well known animal is reminded of the whole to which it belongs. This is simple reproduction: a having been co-presented with b, on its reinstatement, recalls b. Instances of this kind are usually chosen to exemplify association by Contiguity. When the anatomist, on seeing a skeleton having a certain type of structure, is reminded by it of another of a more or less similar type, the process may still be regarded as simple reproduction: α recalls α through their common part or aspect x. Instances of this nature are usually chosen to exemplify association by Similarity. Finally we have a well marked case of proportional suggestion when an anatomist, having before him part of the skeleton of an unknown animal, reconstructs the rest from analogy with known types of structure. In this case a calls up β, because $\frac{a}{\beta} = \frac{a}{b}$.

§ 14. *Thought and Conflict.* I have said that conflict becomes more frequent and more intense in proportion as thought is more sustained and more strenuous. The reason is that in a process of thought, the presentations a^n b^n c^n which are successively incorporated in the same ideal system may be regarded as constituting a single complex presentation, so that the successive apperceptions are stages in the comprehensive process by which this complex comes to be apperceived as a whole. The dominant system tends to assimilate each successive presentation simply because it is an integral part of the series, notwithstanding the incongruous adjuncts with which it may be connected. If a lawyer has once proposed to himself to defend or prosecute on lines of a certain theory, he is bound to do his utmost to make all the details of the case fit in with that theory. He is accordingly almost certain to meet at some point or other with circumstances difficult to explain. In this instance, the conflict takes place between the inward flow of ideas as determined by proportional production and data furnished from other sources, such as the evidence of witnesses. A number of circumstances interpreted in a given manner prescribe in advance to a certain extent what the nature of the remaining facts must be if they are to fit in with the theory. If they turn out to be at variance with the anticipations thus excited, conflict ensues. Conflict may also originate in self-contradiction. The inward flow of ideas as determined by proportional reproduction may of itself call up presentations which have implications precluding their incorporation with the dominant system.

We have already had occasion to examine the various results of conflict. It is necessary here to add that sustained and persistent conflict occurring in the course of a train of thought, tends to produce a suspension of the onward flow of ideas and a regressive process by which the movement of attention starts afresh from a previous link in the ideal chain. Its new course is not however, as a rule, a mere unchanged reiteration of the previous line of reproduction. New terms may be introduced into the series and others discarded from it. In this way the total presentation formed by the union of all the successive terms, may become modified so as to admit of being incorporated in the dominant apperceptive system. The constituents of the complex whole, which previously offered an insurmountable resistance may be omitted, or their relation to the whole, may be so modified that they cease to occasion any serious conflict. Inconsistencies, which at the outset hinder the

lawyer from making out his case, may disappear when reconsideration of the circumstances suggests new possibilities to his mind. I have already discussed other processes by which conflict may be brought to an end. These processes play an important part in removing the difficulties which arise in the course of a train of thought. They are not however essentially connected with thought as such. They may take place independently of it. But the reversion of attention to previous links in the train of ideas, giving rise to a modified repetition of it, is a distinctive feature of *thinking*.

I have now discussed in a broad and general manner, the nature of Thought in so far as it is possible to do so without reference to Language. In the following article, I propose to deal with the special part played by words or signs of a similar nature in the process of thinking. The basis for the treatment of this topic is already laid in the present paper. I hold that Language is from a psychological point of view a peculiar movement of attention having a peculiar influence on apperceptive process. Whoever has been able to follow me in my treatment of Attention and Apperception will I believe have no difficulty in following my treatment of Language.

III.—HELMHOLTZ'S THEORY OF SPACE-PERCEPTION.

By J. H. Hyslop.

I.

In Mind No. 52 I had occasion to allude to Helmholtz's theory of "unconscious inference" as the source of the visual perception of space while criticising Wundt's theory of "psychic synthesis". In the course of that criticism I briefly referred to certain phenomena, those of localisation in accordance with the degree of binocular adjustment, as effectually disproving Helmholtz's explanation of the binocular perception of depth by "unconscious inference". But as the objection to this theory obtained its force from the fact that we were dealing with binocular phenomena only, while it may be that the perception of space, in its last analysis, must be explained by monocular functions, I wish to return to the question from a modified position and to examine Helmholtz's theory in the same spirit in which I treated the views of Wundt. But the nature and import of his theory must first be made clear.

The doctrine of "unconscious inference" is explicitly founded upon Helmholtz's general theory of knowledge. This is done both in his *Popular Scientific Lectures* and in his great treatise, the *Physiologische Optik*. We have in this fact a very fortunate means of knowing just what philosophic significance to attach to his special view of space-perception. It will seem a paradox to all who are acquainted with Helmholtz as an empiricist, especially in regard to the origin of the idea of space, to say that his theory of knowledge is essentially identical with that of Kant. But this is clear to the student of philosophy, and it may moderate the opposition to Helmholtz's empiricism if sympathisers with Kantian idealism take account of the fact. True, this identity does not rest upon the conception of space by which Kant conditioned the character of his theory of knowledge. For in transcendentalism the conception of space upon which the theory depends is both *a priori* and ideal; while Helmholtz, at least in the sense of sight, distinctly denies the *a priori* nature of space, without, however, asserting anything *pro* or *con* regarding its ideality. It is clear that the nativity and the ideality of

space are not interdependent, or mutually implicative of each other, for the reason that there is nothing in the historical genesis of our conception of space to determine what its intrinsic nature is, except that in the investigation of the one we may discover what the other may be. Hence there is nothing to prevent a man from being an empiricist regarding the origin of the idea of space and at the same time a transcendentalist in his theory of knowledge. This is what Helmholtz is, although he may not be consciously so. The fact will be evident, however, if his theory be presented in its main features and its relation to Kant.

In the third section of his *Physiologische Optik* Helmholtz goes into a long digression upon the theory of knowledge in general, expressly stating that it is designed to prevent those who have reflected upon the nature of sense-experience from misunderstanding the nature of his own doctrine in regard to space. The first remark in this connexion is that he regards sensations merely as symbols for the relations as well as the existence of an external world, and that he excludes from them every resemblance or similarity with that which they indicate. The latter statement was designed to express the doctrine that there is no pre-established harmony, or representative similarity, between objects and impressions, a view upon which Helmholtz lays great emphasis and which he opposed to what he thought was assumed by the theory of nativism. But it can be replied to this that nativism does not necessarily make any such assumption as that there is a pre-established harmony between objects and "ideas" as presented to sense. It is true that nativists have often enough done so: but it was because they were realists of a certain kind, or were under the domination of certain preconceptions in physiology at the same time, and not because they were nativists. Helmholtz ought to have remarked here the very important case of Kant, who was a nativist, and whose view of the distinction between noumena and phenomena corresponded to his own. Nativism in its proper conception and sphere refers only to the *historical* relation between space-perception and the sensations with which it is connected. But aside from this criticism upon Helmholtz's position, which is always important to keep in mind, his conception of sensation, described as symbolical of something unlike it in reality, is immediately repeated in a statement which identifies his position with that of Kant; namely, that "our impressions, are effects which external objects produce upon the sensorium and consciousness". There is only the substitution of "effect" for "symbol" in the passage; and then, to

repeat his idea about the difference between objects and impressions he is careful to emphasise the fact or supposition that there is no other kind of truth in our presentations of sense than a practical one. Upon this, the reaffirmation is made that our sensations can be absolutely nothing except "symbols" which are used for regulating our movements and actions.

But in thus setting a chasm between reality and experience—a chasm which he observes is admitted by all schools alike—he raises the old question: How can we know the external world at all? Helmholtz's answer to this question is, that our knowledge of objects is an inference or construction from the *a priori* conception of causality. He recognises with Kant that the data of knowledge are the facts of experience, sensation, or consciousness. These require their meaning to be determined, as they indicate nothing of themselves. They are effects which require a cause to explain them, and hence, by a process of inductive reasoning, objects and their properties, so far as they are realities apart from experience, are simply inferred causes according to an *a priori* law of mind; though this posits, instead of the twelve Kantian categories, only the one category recognised by Schopenhauer, that of cause and effect. It is apparent at once that there is a close affinity between the two views compared, although there is a difference of opinion, or perhaps of language, in regard to origin of the conception of space. It will be noticed also by most persons that the manner in which Helmholtz employs the function of inference would seem to identify him with the "hypothetical realists" or the "cosmothetic idealists" rather than with transcendentalism. This is at least in a measure true, but not to that extent which would exclude a comparison with Kant. Neither his empirical view regarding the genesis of space nor his use of inductive inference, both of which seem to have been borrowed from English sources, the former from Berkeley and the latter from Mill, in the least contradict the supposition that his general theory of knowledge is identical with that of Kant; because, unlike Mill and his school, he bases his theory of knowledge and perception upon the *a priori* idea of causality, and lays such emphasis upon the denial of any pre-established harmony between the external world and the nature of perception that no essential antagonism can be conceived between him and the great transcendentalist. This is important to keep in mind when considering the relation between his theory of the genesis of space and the general metaphysics of Kant. For it has been a common

assumption that any application of the term "empirical" to the genesis of space-perception was a contradiction of Kant's philosophy. But it is a sufficient refutation of this assumption to know that Wundt, who distinctly claims to be an empiricist, urges his view as a better proof than Kant's arguments of the ideality of space and by consequence of the general Kantian philosophy. But the most decisive proof of the affinity between Helmholtz and Kant is Helmholtz's language where he sums up (*Physiologische Optik* § 26, p. 456) the historical views in regard to sense-perception, and states that his own investigation applies to the problem which Kant did not consider, namely, the perception of particular or concrete spaces. This fact, with his acceptance of the *a priori* nature of causality and of the idealist position in regard to things-in-themselves, shows a closer relation to Kant than to the English sensationalists from whom he has largely borrowed, and it is a fact which will go very far to determine the character of Helmholtz's empiricism and his real conception of space as considered under that theory.

But after laying down the doctrine that our knowledge of the external world is an interpretation or inference from the data of sense, he finds it necessary to distinguish between this process and that process of inference in which the data are consciously known to be signs. The common mind, being without a reasoned philosophy, is not aware that sensations are only signs of things. It does not suppose for a moment that there is a chasm between realities and impressions, which has to be bridged by peculiar intellectual processes. On the contrary, it imagines a power of directly perceiving things, and even the most advanced philosopher finds the directness of this knowledge a matter which his theory must respect. Hence, if we are to call the process by which a knowledge of externality is gained an inference of any kind, it must be by drawing a distinction between it and that form of inference in the experimental sciences where it is recognised that the data, which are symbols of what is beyond them, are consciously known to be data requiring interpretation. This distinction Helmholtz draws by calling the inductive inferences of the sciences *conscious* (*bewusste* Schlüsse), and those involved in external perception of world *unconscious* (*unbewusste* Schlüsse). It will be clear from this position that his theory of space-perception is but a special application of his general theory of knowledge and must be criticised accordingly. Had his doctrine of "unconscious" inferences been a loose adaptation of the idea expressed by Berkeley in the following language, it would have been less exposed to

critical objections:--"So swift and sudden and *unperceived* is the transit from visible to tangible ideas that we can scarce forbear thinking them equally the immediate object of vision". But the general character of the theory forbids our supposing that the expression "unconscious" was used loosely and in a random way, merely to express the readiness with which certain phenomena were interpreted and the construction of an external world given as their meaning. No doubt, Berkeleyan conceptions contributed to the view, but helped rather to the conceiving of the process as an inference than as an "unconscious" one. The extension of "unconscious" to the whole of perception as an inference was going beyond anything Berkeley dreamt of. It is a position that affiliates more readily with Kant, as is evident from the philosophy of Schopenhauer, who influenced Helmholtz in more ways than we have time or space to indicate. The fact that the inference was regarded as "unconscious" gave it all the directness or immediacy of an intuition (*Anschauung*), especially when it was supposed to be regulated by the *a priori* conception of causality. These considerations afford us two results. The first is that they exhibit a form of empiricism which is not absolutely opposed to transcendentalism, as is too often supposed by careless inquirers into the nature of Helmholtz's theory. The second is that a position is reached from which we can undertake an analysis and criticism of the theory. This criticism will be directed upon the theory in general and upon its application to the perception of space in particular.

The general and the particular theory had the same object; namely, to oppose every form of apriorism, at least in so far as any such system advocated, or seemed to advocate, the original consciousness of what are really complex conceptions, or the definite perceptions of objects which require experience to give them the clearness and complexity assumed by them in the mature consciousness. But admitting that this is a laudable purpose, the manner in which Helmholtz formulated his theory may be open to the charge of involving a contradiction. On the one hand, the theory of "unconscious inference" supports the empirical doctrine of perception only in consequence of calling the process an inference. Inferences require experience for their development, because they imply two terms, and these two terms must represent either successive experiences, or a characteristic in one experience which has been coexistent with another and suggests it. In both cases the inference is conditioned by a comparison of data which appear at

different moments of consciousness. On the other hand, to call the process "unconscious" is to restore the conception of immediacy which the idea of inference is supposed to exclude. The characteristic of an inference, as usually understood, or of the conscious inference which, according to Helmholtz, constitutes the process of the inductive sciences, is that the data from which the inference is made are consciously known to be symbols of something beyond them, and which they do not represent or contain. Thus, if in looking at a table I infer from certain peculiarities of colour and texture that it is made of oak wood, or if I infer from the appearance of a cloud in the sky that it is raining in a particular locality, I have before me certain visual facts which are not the object of the inference, but which are co-existences or causes that have once been connected with these facts, or so often connected with them that they are supposed to be there in this particular case, and only await the proper means of verification to prove the inference.

In such cases the mind knows that its data are signs, and it distinguishes between the sign and the object which is not perceived at the same time or in the same way. But in the so-called "unconscious inferences" no such distinction can be admitted. They are called "unconscious" for the very purpose of indicating that there is no immediate knowledge of the sign as distinct from the object, and, in addition to this, the position is never reached which considers sensations as mediate signs of an unknown object, except by speculative philosophers. In saying this, we do not wish to discredit the view, but to present the facts which move investigators to class the fundamental processes of perception with those of inference. Now, in employing the term "unconscious" to describe them and to indicate the absence of precisely that quality in general inference which makes it empirical or derived by experience, we at once lose all that we had gained by calling the process an inference, in so far as any controversy between nativism and empiricism is concerned: and unless a refutation of nativism is effected by it, the theory can dispense with the term "unconscious" altogether; indeed, must dispense with it in order to retain alliance with empiricism. If the terms were used only in a loose sense to denote great readiness of perception, and distinguished from ordinary inference only in the readiness with which the mediate act of mind was performed, there would be little objection to it. But a well defined theory can never be founded upon conceptions that are loose and indefinite. Philosophers are right in de-

manding that conceptions defining a theory shall be clear and accurate, and the only way in which we can distinguish accurately between a conscious and an unconscious inference is to hold that the latter denies the quality which characterises the former; and, as conscious inferences or inferences in the inductive sciences start with facts and an unknown object of search, the "unconscious" inference must be without these mediating terms, so that consciousness in such a case would not distinguish between the sign and its object. But, as we have said, this surrenders all the presumptions in favour of empiricism. Outside of its relation to the dispute between nativism and empiricism, the doctrine can be supposed to have some merits. For the manner in which the distinct experiences of disparate senses are connected is very suggestive of the general function of inference when the connexion is conceived without the synthetic unity of consciousness; that is, the simultaneous realisation of different experiences, and the readiness with which it is done, might very well suggest a contrast with the hesitancy which so often accompanies ordinary inferences. But even here it can have only a provisional value, because scientific, philosophic and logical accuracy require that there should be a necessary exclusion between nativism and "unconscious inference," on the one hand, which there is not, as we see in the cases of Kant and Schopenhauer, and that, on the other hand, the form of the expression or theory should not be exposed to the charge of being a self-contradiction. As long as these conditions are not fulfilled, the theory cannot be opposed to any of those which it is designed to correct or supplant. It can only be used to shift the point of view for facts, or to supplement the incompleteness and one-sidedness of other theories.

The criticism of its application to the special case of space-perception involves the same arguments as those already presented,—with one modification which must be indicated, because of the misunderstanding which men like Ribot seem to have regarding the problem Helmholtz is endeavouring to solve. I have indicated that he distinctly states his problem to be the perception of definite spaces, and that this was not the problem which Kant discussed. He does not state, though he very clearly implies, that he is at one with Kant in regard to the *pure* perception of space, and so limits his problem to the question whether our perception of particular distances and magnitudes is native or not, and what are the means or conditions of this perception. But if the process of perceiving definite distances and magnitudes is an "un-

conscious inference," and if an "unconscious inference" is in no way opposed to original mental acts, then even the particular spaces of ordinary experience become native perceptions, or so nearly these that the consequences of the difference between nativism and such a view cannot be very important. The argument is an *a fortiori* one for *pure* space, or the instinct of the mind to perceive space at all; so that those who resort to Helmholtz for aid against Kantian theories are indulging a forlorn hope. But such weaknesses as we may thus indicate in the theory of "unconscious inference" are mainly applicable to it when abstract space is supposed to be its object, and hence do not mean to deny it cogency in so far as elements of *inference* may be involved either in the complex and synthetic conceptions of space as a common sensible, or in our definite judgments of distance and magnitude. I do, however, intend to intimate that this act cannot be regarded as "unconscious" without forfeiting every right to antagonise nativism or support empiricism by it. Even if we do not regard the expression "unconscious inference" as a self-contradiction, the process cannot define any such antithesis between these two theories as the unqualified conception "inference" can do; because its "unconscious" character gives it a directness which is either incompatible with ordinary conceptions of empiricism or makes the difference between that theory and nativism very unimportant.

With this conclusion and the equivocal character of Helmholtz's theory presumably established, and with the still more important postulate fixed in our minds, that our views about the genesis of definite space-conceptions can never be transferred to *pure* space or that space-construction of phenomena which is an invariable function of consciousness apart from its development by experience,—we may proceed to consider the elements of truth in the position of Helmholtz in so far as he proves the existence of inferential functions in space-perceptions, even if we are tolerant enough to admit their "unconscious" nature in the loose and untechnical use of that term. I am convinced that there are native and experiential elements in the process taken as a whole, and that it is no longer possible to maintain without qualification one or the other of these theories. The problem is too complex for so easy a solution, while it should never be forgotten that even empiricism always requires a basis of natural data upon which to found its influence of experience.

The crucial incident, which seems to have originated or to have effectively substantiated the view that visual perception

of distance was inferential, was the fact that plane dimension has, and solid dimension has not, a representative in the retinal image or impression. As soon as physiologists discovered the existence of a retinal image like that in the camera obscura, they were ready with an explanation for the perception of magnitude, but the very force of this explanation created a difficulty which intuitionalists before that time had not to contend with. There is no similar organic arrangement discoverable for the third dimension, and no known possibility that the retinal impression should have a representative of solidity in it, at least with any such correspondence between it and solidity as appears in the retinal image and its correlate magnitude or plane dimension. The most natural explanation, after admitting this anomaly, was a process of inference based upon visual signs, consisting variously of organic, muscular, and colour sensations having different degrees of clearness. In this view of the case the typical conception of trinal dimension was supposed to be given by tactual and muscular sensations in connexion with bodily movements, and then its existence inferred by certain visual signs which experience showed were frequently or invariably connected with solidity. This is, in brief, the position taken by Berkeley, Mill and the associational school generally, and the incidents which support it are numerous enough to prove that, whatever native functions are allowed to vision for perceiving solid dimension as a visual percept, the connexion (or identity and coexistence) of this percept with the third dimension of tactual and muscular experience is complicated with inferential processes. But if the claim be set up that visual space is distinct from tactual space, as a presentation of sense, admitting an associational synthesis for identifying them in reality, and that there is no pre-established harmony between impressions and their causes or objects, the anomaly supposed to exist in vision at once loses its significance and ceases to be an anomaly. Hence there would be no ground for using inferences, conscious or unconscious, to explain the phenomena of vision: for the only suppositions which necessitate a resort to illation are, that there is an anomaly between the perception of magnitude and that of distance by sight, and that tactual or muscular conceptions of solidity are the only conceptions we have of externality or of dimension other than plane dimension. Now Helmholtz's denial of pre-established harmony, as well as the fact that he makes the visual perception of magnitude experiential and so not definitely correlated with the retinal image, exclude his right to use

the first supposition; and the phenomena of binocular adjustment which I discussed in my previous article exclude him from the second. For those phenomena showed in the visual consciousness a *quale* which, with or without its relation to tactual and muscular extension, was other than plane dimension. Hence unless this *quale* can be proved to be the result of inference, Helmholtz must limit the application of his theory to the synthetic connexion between touch and sight. Those, indeed, who do not make his assumptions about the perception of magnitude and the antithesis between sensation and reality will not be exposed to our criticism. But with them we have nothing to do at present. We have only to find the nature, limits, merits and demerits of the theory of Helmholtz.

The first fact to be observed in connexion with the limitation imposed upon his empiricism is that Helmholtz distinctly admits in his *Popular Scientific Lectures* (p. 238, American translation) that the perception of space in touch is native. This of course contradicts his universal application of "unconscious inferences" to perception at large, unless we assume, as we have endeavoured to show, that such a doctrine is compatible with, or even implies, nativism. The contradiction is between his use of it as an empirical theory and his application of it universally while space-perception in touch is made native. I shall not push this single instance too far, as it was very probably a slip of the memory or an unwary concession to earlier views, and the emphasis of his doctrine is so pre-eminently laid upon vision that it is hardly fair to measure its integrity by a casual remark in a popular work. Still the trend of his argument, although I am aware of no definite statements to this effect, bears traces of the very conception which would lead to such a remark. However, since I am not solicitous to give a complete refutation of his view, I pass on to mention the more important limitation to the application of his theory. This, as already indicated, is the fact that his fundamental principles—the denial of pre-established harmony and his assertion of the experiential nature of visual magnitude—do not allow him the assumption of such an anomaly in the visual perception of plane and solid dimension as would require an appeal to inference in order to explain the consciousness of distance not actually given in the data of the visual sensation. Hence he can consistently with his own principles apply the theory of inference only to the synthetic conception of space as it represents the unity of visual and tactual percepts. There is undoubtedly here a large and legitimate

field for inferences, whatever we may choose to call them in reference to their directness; and Helmholtz could not have chosen in support of such inferences a stronger set of phenomena than optical illusions, of which there are a great number affecting the perception of distance. But it is not my purpose to go into the common arguments for the presence of inferential elements in the vision of space. My intention rather is to discuss a class of phenomena in this connexion which have not generally received due attention, as showing that, even if other facts make the visual perception of distance direct and natural, they may on emergency be supplanted by influences which accomplish the same result through inference. This is not to indicate that there is no visual third dimension, but that there is an interesting *quale* in the visual sensation which possibly helps to complete the definite perception of visual solidity by inference, and certainly helps by the same process to identify visual with tactual and muscular space. This class of phenomena is comprehended mainly under the head of *parallax of motion*, an influence which seems to do the same for monocular vision that adjustment and fusion do for binocular vision. The parallax of motion consists of the different apparent movements or velocities of bodies in horizontal meridians and situated at different distances from the observer. Thus, if the eye is fixated upon a given point and the head moved from side to side without changing the fixation, all objects nearer the observer will have an apparent motion across the visual field. The same is true of all objects beyond the point of fixation. These are commonly known facts. But certain aspects of their significance are not so commonly known, although the influence of the parallax of motion upon the perception of distance has not passed unobserved by Helmholtz.

II.

In binocular phenomena, such as stereoscopic relief in the fusion of geometrical figures constructed with a view to that effect, and localisation according to the kind and degree of adjustment, there is, as I showed in MIND No. 52, no room for inference. The perceptions seem as direct and as reflex as those of colour, and variations are not accompanied by any illusions, to which the process of inference is always incident. But since all are agreed, even if this binocular perception of solidity be a natural function, capable of very ready adaptation by experience to the conception of tactual and muscular space, that in the last analysis the perception

of space, and so of solid dimension, must be relegated to monocular vision, where we cannot take account of convergent adjustment—we have to ask how distance can be perceived monocularly, when there is nothing but a plane image upon the retina, and when we cannot suppose the existence of organic muscular sensations from convergence or divergence as a basis for inference. The reason for considering the problem ultimately as one of monocular vision is, that we are always as conscious of solidity and distance when binocular functions are suspended as before. If the perception of the third dimension were due to binocular processes only, then the field of monocular vision would present nothing but a plane. The fact is that those who are blind in one eye perceive distance with the other quite as accurately as those who use both eyes, although some experience is required to produce accuracy. The fact also that any one, in closing one eye, has as decided a consciousness of perspective, although not so distinct or clear, as with the two eyes, has very great weight. But the very incident that it is less distinct is a presumption in favour of its being inferential in such cases, especially when we learn that in many crucial instances objects appear in monocular vision to be situated in a plane which are instantaneously localised by binocular vision in the third dimension. Prof. Le Conte's application of Dove's experiment to monocular vision is a proof of this.

There are two facts which serve as a check to hasty conclusions in the matter of monocular vision. One of them I have not seen mentioned by any writer; the other is a matter of common note. The first is that, even when one eye is closed, the adjustments of the open eye are always accompanied by those of the other eye; not, indeed. so perfectly as when both are open, yet sufficiently to make very forcible the suggestion that the muscular sensations, or adaptation which thus conform to ordinary experience, may account for the localisation which is generally assumed to be monocular, but which is really binocular, and is less clear because of the anomalous absence of one of the retinal images. This will be a fact of some weight to adherents of the theory of muscular sensations and of "psychic synthesis". But it is materially weakened by the consideration that we are not conscious of adjusting the closed eye simultaneously with the open one, and can prove the fact of this motion only by suddenly opening the closed eye after the adjustment of the other eye has taken place, when it is discovered that the adjustment of the closed eye has been partly effected.

Again, the marked degree of imperfection in this adjustment, with perhaps no disturbance to perspective in many cases except in respect to clearness, argues a diminished importance in the fact, so that its cogency for the continuance of binocular influence in what is presumably monocular only is very much impaired. The second fact is assumed by many to have considerable force. It is the fact of focal adjustment or accommodation which is the muscular analogue in monocular vision for convergence in binocular vision. The perception of distance is supposed to be due to this influence whether we choose to regard it as direct, as an element of "psychic synthesis," or as an inference from the organic sensations which it may produce. But there is more than one objection to this, of considerable force. The first is that in Le Conte's application of Dove's experiment accommodation either is not capable of as sensitive a reflex as binocular parallax, or it has no influence of an essential kind upon the determination of perspective. In either case, it cannot be appealed to on the ground of its muscular character: in the former case, because whatever focal adjustment is initiated by the appearance of the electric spark is not accompanied by any discoverable localisation in accordance with it; and in the latter, because a difference of locus between the point of fixation and that of the adjustable body is not observed. A second objection, of greater weight, is based upon an experiment which I have performed hundreds of times, with a result invariably the same. It is an experiment showing apparent translocation of objects in the monocular field when changes of focal adjustment are effected, which is proportioned to the changes of retinal magnitude and distinctness, not of the accommodation, as would have to be the case if focal accommodation were the principal agency in the result. Thus, if I close one eye, and voluntarily change the accommodation for a nearer point of fixation than a window across the street, or any other object, the magnitude of the object decreases; and, by alternating this change as rapidly as I can, the object seems to move to and from me, but always *in the direction opposite* to the change of accommodation, and precisely in accordance with the apparent changes of magnitude in the image. Again, if I instigate the same changes of accommodation while looking at a distant gaslight, the light seems to move toward me when the focal accommodation is for a nearer point, and away from me when the accommodation is relaxed or fixed upon the gaslight. This would accord with the supposition that the translocation

was due to focal adjustment; but it is significant that in this case the apparent magnitude of the image or light is *increased* when adjustment is effected for a nearer point, and *decreased* by the reverse adjustment, a fact due to a dispersion of luminous rays not possible or not noticeable in the former case: so that the localisation is in accordance with the changes of apparent magnitude, and not the changes of accommodation. This is strongly confirmed by the uniform experience that, if the accommodation be sudden from one point to another and not graduated, even a change of apparent magnitude is accompanied neither by an apparent motion nor by a change of localisation. Accommodation may be a contributing factor in monocular localisation, although there is much to dispute its claims to any consideration at all; the present problem does not require us to settle the matter. But whatever may be claimed for it as a factor, the incidents I have mentioned certainly prove that accommodation is not the prerogative factor in the monocular perception or judgment of distance. If it were the chief incident in such perception, it could not be the basis of an inference, because, in all normal cases, it gives rise to no organic sensations, and we are not conscious of its occurrence. It could only be a source of immediate perception, unless we wished to repeat all the absurdities of "unconscious inferences". But if accommodation is not adequate to produce monocular perspective, and does not present a basis for inferential functions in monocular localisation, the parallax of motion does supply these data, although it is not necessary to suppose that it excludes the presence of other inferences in the direction of the same result. It is an influence affecting the consciousness of distance when others are ineffective or inactive. The force and value of this influence to explain monocular localisations must be learned from the experiments to be described. It only remains to determine whether the process is inferential or not.

We shall not assume dogmatically that it gives rise to an inference, because the problem is so complex that we can well conceive the existence of some peculiar innervation, or some psychical activity distinct from inference, to account for the perception. But if this be the case it may be best to arrive at such a supposition through testing the hypothesis of inference occasioned by the parallax of motion. The ground for supposing the consciousness of distance to be an inference when it is instigated by the parallax mentioned is, that the images either seem to lie in the same plane, or the tridimensional distance between them is not

so distinct, until the parallax of motion reveals their true position. These phenomena correspond exactly to the conception of those who hold that the representative of plane dimension in the retinal image decides the nature of all perceptions whose character is not presented in the image except as a visual sign, and hence that aught beyond magnitude must be the result of inference. The experiments themselves will show the force of this view. Three of them have special value because they were not instituted for the purpose but were incidental discoveries in a purely casual experience, so that no antecedent conceptions and associations interfered to affect the appearance of the phenomena.

Looking out into the open air through a window which was closed by a shutter with open slats and by a fly-screen inside the shutter, I observed that the wires of the screen seemed to be located beyond the shutter, and at once recognised that the effect was due to binocular combination and fusion of images. While watching the phenomenon I made a slight motion, and observed immediately that the screen then seemed in its right place nearer than the shutter until binocular influence again translocated it beyond the shutter. I repeated the experiment a number of times, and always with the same effect. The second incident occurred in much the same way. A screen stood near the wall, about an inch and a half from it, and my eyes were about two feet from the screen, with a gaslight behind me some feet and at one side, so that I could observe the shadows of the wires upon the wall only a slight distance at one side of the wires. There was no difficulty in perceiving that the shadows were farther off than the wires as long as the vision was binocular. But when one eye was closed, the shadows and the wires seemed to be located distinctly in the same plane until the slightest motion of the head restored the true perspective as clearly as binocular vision. The parallax occasioned by this motion was instantaneously discoverable and the objects did not seem to lie in the same plane as before. But a more remarkable instance of the same phenomenon was the third. While engaged one day in reflecting upon a subject with my head resting upon the back of my chair, and looking across the street, I observed what appeared very distinctly to be a spot upon the window-pane on the opposite side of the street. By closing one eye I observed that the spot retained its apparent localisation although not so distinctly as with both eyes. While thus looking at it, I moved my head slightly and discovered suddenly by the parallax of motion that the spot was on the window not more than two

yards from me. Curious to know why the illusion had been so complete I opened the eye that had been closed and kept the fixation upon the farther window with the assurance that binocular vision in connexion with the homonymous character of the spot's images would make it appear in its proper place nearer than the point of fixation; but to my surprise it appeared more distinctly than ever to be located on the farther window. I determined to examine it more closely, and soon found that there were two spots on the window near me just far enough apart to combine when the eyes were adjusted for a point in the farther window, so that the case was one of true binocular translocation of images. In repeating the experiment variously, I found that the parallax of motion would overcome the binocular localisation of the spot upon the farther window and restore it to the nearer window, as the same cause always made it appear nearer in monocular perception.

To those who start from or assume the representative nature of the retinal image as the condition for the perception of plane dimension, the phenomena just described will seem to confirm the supposition that solid dimension is an inference, because distance found no equivalent in the impression until the parallax of motion appeared, and in this the most apparent fact is that no datum was added to it in any way to make distance a representative in it. Even if we suppose the possibility that some innervation or neural process of a peculiar kind identical with or constituting the visual construction of the third dimension might exist, it would seem equally possible to many that inference could accomplish the same practical result by regarding the parallax of motion as a sign of a conception otherwise obtained. This other source may safely be assumed to be touch, and this fact will bring the phenomenon entirely within the reach of the general theory of inference. This of course is but to place the matter where Berkeley left it; and, in so far as the association of tactual and visual percepts is concerned, perhaps few will question the influence of inference, and hence I need not argue it. But there is an incident in connexion with the phenomena which so far confirms the supposition that the connexion between the two senses is inferential and that the parallax of motion is only a sign upon which such an inference is based, that it may well be emphasised. It is the fact that, in such cases, whenever the mind endeavours to form a clear idea of what the parallax means, it resorts most naturally to analogies in touch and muscular experience, or to the conceptions of binocular

localisation; in which fact is indicated that the parallax of motion derives its meaning from some other conception and so is an interpretation in its reference to solidity, rather than a perception. Whatever else it may give rise to, it is accompanied by inferences which coincide in their results with any other assumed process. If we assume anything else as an original datum of visual extension apart from tactual, there will not be any dispute about the fact that the identity of this datum with the tactual, or the passage from the visual sign to the tactual *quale*, is inferential, and to that extent a clearer case than that of retinal magnitude and distinctness is made out for the presence of inferential functions in the visual perception of distance.

But as this conclusion can be admitted without necessarily proving Helmholtz's theory, it remains to ask whether the parallax of motion in such phenomena as have been described will be a visual sign for an inference to the visual third dimension represented in binocular fusion and parallax. Helmholtz is not limited in his theory to the connexion or associations of tactual or visual extension, as was Berkeley, because he gives his theory of "unconscious inferences" a scope covering all forms of sense-perception; although farther examination might prove that the theory can be maintained only upon those limitations. But since he denies all pre-established harmony between impressions and objects, it would seem that this parallax of motion could very well be regarded as a sign of a dimension which the visual impression itself is not. And, if we go outside the special cases described to those where the parallax itself has to be inferred from certain visual data—such as the more rapid approach or separation of objects horizontally, when the observer changes position from side to side, than would be if the objects were in the same plane—we shall find an unmistakable case of the influence of monocular parallax where binocular vision is ineffectual, and that influence is one of inference twice removed. So much, then, can be said for the co-operating agency of inference in making up the total consciousness of space; and this influence is enough to make quite pardonable the construction of a theory upon that basis alone. As the parallax of motion is the chief factor in the great variety of phenomena producing such a result, it may be accredited with being the visual sign required.

The view here taken is corroborated by farther interesting experiments illustrating the influence of the parallax of motion. I have often tried the experiment of looking with one eye at the reflexion of an object in a mirror. If the

mirror is an excellent one with fine reflecting powers, the localisation even in monocular vision will be tolerably good, perhaps as good as when the object is looked at directly. But if the surface of the mirror is imperfect, heavily coated with dust or otherwise affected, so as to make it quite visible and to present objects that will affect accommodation when attention is given to them, the reflected images of other objects may seem to be located in its surface, or in the same plane as the mirror itself, or so indefinitely localised as to make their apparent position beyond the mirror very uncertain. This is especially the case with objects or images reflected from plane glass behind which is a paper or picture. But if the head is moved from one side to the other, keeping one eye closed, the parallax of motion at once makes the image appear very distinctly located beyond the glass. There is no confusion as to its general position. I have found also that the shadows of the limbs of trees, irregularly shaken by the wind, often present the appearance of perspective caused by the parallax of motion. I discovered this accidentally in a very distinct case of shadows caused by electric lights, and have corroborated it by frequent experiments. Still I am not disposed to attach much weight to it, unless it can be confirmed by general experience, because it often fails and those cases in which it was successful may possibly have been illusions. They were, however, suggestive of possibilities, and even the very illusions may attest the influence of inference in such cases.

The illusions produced by a cyclorama are very interesting phenomena in this connexion. In moving from place to place before the picture, it is quite a common experience to feel a slight dizziness or vertigo. I have overheard this feeling remarked by persons who did not know the causes of it, which are found in the fact that their motion disturbs the relation between visual adjustment and the apparent perspective of the picture. But I have also noticed that any motion toward the picture is invariably accompanied by its apparent and rapid approach toward me, until I become stationary again, when the illusory perspective or distance is immediately restored. While approaching it, the picture seems near, or much nearer than when standing still, although in the case to which I am referring the spectator cannot get nearer to it than forty feet nor further from it than fifty feet, and standing at either distance does not affect the illusion: the perspective seems as great in one position as in the other. It is only when in motion that any distinct consciousness of nearness or approach is effected: and this of

course is due to the changes of adjustment, local and convergent, although these are very slight for those distances. But the incident which is mainly relevant to our purpose is the fact of illusion, which investigators have not failed to explain by showing that it is due to a false interpretation of visual signs under circumstances which, if the third dimension were a direct and reflex construction from the states of optical adjustment, would not permit the occurrence of illusion. The argument could not be stated more forcibly for the presence of inferences in the process, and Helmholtz enumerates multiplied instances where judgment interprets what cannot be directly seen: for example, illusions of magnitude and distance, aerial perspective, subjective or entoptical phenomena, inversion of mathematical perspective, interruption of contour by one object partly covering another, &c. These all point in the same direction, and although, as I have said, he mentions the parallax of motion he does not make much use of the phenomenon, but concentrates his chief attention upon the apparent motion of objects toward each other as we recede from them, and apart from each other as we approach them. All these make out a very strong case for the theory of inferences, more or less recognised since the time of Berkeley, and fortified as it has been by accumulated instances. Whether they support any doctrine of "unconscious inferences" may be another question, unless, as indicated, the term "unconscious" be taken in the loose sense to denote a readiness which is not apparent in deliberative inferences where hesitation occurs.

III.

Let us turn to a criticism of the theory. Undoubtedly the phenomena described, and those to which Helmholtz appeals, prove the presence of interpreting and inferential functions: for it is, perhaps, impossible to exclude the accompaniment and co-operation of such agencies from any or all forms of experience. But it is the mistake of Helmholtz and advocates of his theory, or of that of Berkeley, that they actually or by implication deny the existence of any other factors and influences in the process. They make the process wholly one of inference from data not containing space. So far as they are thinking of the relation between tactual and visual phenomena, they are right; but they forget that what is true of the synthetic connexion between two or more senses is not necessarily true of individual senses, and that, so far from being the sole cause in the result, in-

ference may be but one of co-operating causes, or one cause acting beyond the limitations of others. For instance, it is conceivable that within certain distances the monocular and binocular perception of the third dimension is determined directly by visual functions, say of adjustment; but that, beyond the point where changes of adjustment do not occur or are too slight to be observed, aerial perspective, shades of distinctness, differences of retinal magnitude in conjunction with these, &c., may be the basis of inferences which either supplant or assist other functions. This supposition is only to show that the two functions are not mutually exclusive, but may be mutually co-operative. Inference is present in many cases; but, if we observe closely such incidents as the interruption of contour referred to and *inferred* parallax, we shall discover that the conception of space that is inferred from them is either one of tactual and motor sensations, where we imagine the kind of motion required to bring ourselves into contact with the supposed farther object, or it is one representing the way it would appear to vision where the ordinary visual functions could construct a conception of their own. This merely shows that the inference is either limited to interpreting the relation or identity between tactual and visual percepts, or is only a co-operating factor in vision. In the latter case, no contradiction exists between the theory of inference and that of intuition; and, as those who support the theory of inferences do not take sufficient account of the possibility that vision may have its own space or extension immediately seen, but not immediately adjusted to the space of touch, they have extended to vision what is proven only for the relation between sight and touch. In binocular combination of stereoscopic figures, as my former article showed, there is a visual *quale* which is different from the conception of a plane surface. This differential quality may as well be called the third dimension of vision. It is directly seen, and not found by inference, although its meaning for tactual sensations and muscular experience is inferred by association. The same may be true of many instances to which Helmholtz appeals for support to his theory. The inferences of which he feels assured may be limited to the interpretation of the relation between the two percepts or concepts; and, until he shows that no other process is admissible in the individual senses, his verdict for them, implied or asserted from the connexion between touch and sight, must be considered as not proven. Berkeley, by a slip of the tongue, admitted the existence of "visible exten-

sion," but did not see that this compromised his theory of inference in all except its interpretation of the connexion between the two senses of touch and sight. Helmholtz, like Berkeley, seems to argue with the notion of *externality* before his mind, and conceived in reference to tactual and motor experience, but forgetful that space, apart from bodily externality, may also be represented by plane dimension, as an undoubted visual percept of coexistent points, supplemented by a differential quality which, being immediately perceived as magnitude, indicates coexistences external to, or different from those of plane dimension, and so constituting visual extension of the third dimension. What he proves of the association of this *quale* with externality as tactually conceived cannot be transferred on its own merits to the visual *quale* itself which may be called a space or extension *sui generis*. This is precisely the way in which the matter is regarded by those who consider that the true and clearest conception of space is that which is derived from vision, and that touch is adjusted to this by association rather than the reverse. The inducement to assign to touch the priority of experience and importance grows out of the undoubted priority of value which its freedom from illusion and the exposure of the organism to injury mainly through contact give it. But this does not exclude the view that the conception of space may be properly a visual one, requiring the superior constancy of touch to correct illusions growing out of the complexities of vision. Any theory which does not reckon with this fact is likely to commit a fallacy in its reasoning.

To make this position clear, we may recur to the fundamental principle which conditions the theory of Helmholtz: it is the denial of all pre-established harmony between the nature of impressions and the nature of the external world. If he did not deny this doctrine, it would remain possible to explain magnitude or plane dimension by the nature of the retinal image, and then resort to inference to account for solidity. But denying the doctrine, he is able to set up between impressions and objects just that kind of difference which exists between the datum and the object of an inference. It will be admitted, therefore, that he must make this denial if the doctrine of inferences is to be possible. But Helmholtz does not remark that a denial of pre-established harmony is as consistent with an *a priori* as with an inferential theory. It is true enough that a theory of inference cannot exist without this denial, but this theory is not necessitated by such a denial, or does not follow from it.

This he ought to have seen in the case of the sensations. He did not consider that colour or sound represented external reality, nor did he imagine from the denial of pre-established harmony between them and the nature of their causes that the sensations were inferences or products of experience. Hence his presupposition does not carry with it the proof, but is only the condition, of a theory of inferences. The evidence that any object of consciousness is the result of inference must be sought in other facts than the one, that the antithesis between sensations and the external world is such as to make it possible. If it were once supposed that space is a construction, as colour, sound, &c., are subjective affections of the mind or organism, the absence of a pre-established harmony would be assumed in this view; and yet it would not be possible to resort to inference regarding space in any instance except the synthetic connexion between the data of separate senses. This is the supposition which Kant made, and he agreed with Helmholtz regarding the antithesis between phenomena and noümena; but it was impossible for him in his view of the case to infer space beyond the data of perception, because it was itself the form of those data. Helmholtz is in a dilemma here. If he admit pre-established harmony, impressions would represent reality, and space would be an immediate perception, not an inference. If he deny pre-established harmony, space must either be a form of perception or a datum outside of all experience. Now, if it be the latter, an inference to it is impossible, *because an inference is from a certain fact not containing a given datum to another experience which does or did contain it.* Or, if it be a form of perception, while pre-established harmony is denied, much less could it be an inference in the last analysis, or the object of an inference, except in the associated percepts of two senses, where the inference is confined to the interpretation of certain signs in one sense as indicating a datum actually given in the other or previously known to consciousness. In all cases, therefore, it will be apparent that Helmholtz cannot carry his theory beyond the synthetic connexion of touch and sight. But this is not in advance of Berkeley, while the apriorist does not require to dispute such a conclusion. The position of the nativist is made good in the case of vision, if he can show that there are *qualia* which are distinct from colour-reflexes on the one hand and from tactual and muscular percepts on the other, and which may represent or constitute the dimensions of visual space as those of touch constitute tactual space; the two

sets being identified synthetically by any process we may choose to recognise.

An objection to the theory of Helmholtz can be produced from those very phenomena which he adduces in its support and which are generally admitted to agree with the doctrine of inference. They are the phenomena of mathematical perspective, and are illustrated by geometrical representations of solid bodies, such as cubes, parallelopipeds, cylinders, &c. The apparent perception of solidity in these cases has been explained by association and inference from mathematical resemblances in the visual image to that of solid bodies. The case is certainly consistent with the doctrine of inference in so far as we assume that the datum to which we infer is really not in either the object or the image as ordinarily understood. But this consistency alone does not prove the theory: especially as it is meant to pass from this case to the real one of solidity in actual bodies. It is most important to observe, however, that the explanation of such phenomena by inference is usually based upon the assumption that there is a pre-established harmony between the retinal image and plane dimension; so that either the absence of this condition in the case of the third dimension, or the illusory consciousness of solidity when it is known that the object has no third dimension and therefore has no representative in the impression, even if such were otherwise possible, is taken to imply that distance is an object of inference, knowing as we do that inferences give rise to illusions. That is, the theory of inferences is founded upon the supposition that there is an anomaly between the perception of magnitude or plane dimension and distance or the third dimension: and this anomaly consists in the representative character of the impression for one and not for the other. But since Helmholtz denies pre-established harmony *in toto*, he cannot avail himself of any supposed anomaly in such cases, because in his view plane and solid dimension are alike in this respect. And the criticism of his position is made all the stronger by the interesting fact exhibited in the inversion of mathematical perspective. For instance, the mathematical representation of a solid body may be seen in two different ways. A cube may appear in two different positions, and after a little practice the mind can pass from one appearance to the other at will. This is a familiar experiment and we need not describe it in detail. Helmholtz explains the phenomenon by inference, and regards it as explainable only by this view. But the manner in which the inversion can be made to take place at the instigation

of the will is decidedly against such a view. Not that the mind has no power to inhibit inferences, or to exercise a check upon its feeling of certitude in regard to them. But in the cases of mathematical perspective and its inversion there is a peculiar characteristic noticeable in consciousness at the time of the act, if carefully scrutinised, which is not like the correction of an illusory inference. It would be described by Wundt as a slight feeling of innervation, somewhat like that which is experienced in changing the point of fixation and attention from one side to the other of a small round spot. In the case of inversion of mathematical perspective there is, besides, the nascent attempt to realise the perception of motion, such as would take place in case a real object changed its position. That is, the mind expects to see but does not see the motion, and feels a kind of surprise at an evolution from one spacial relation to another without any alteration of outline or impression corresponding to it. Close examination of the visual process in the act of inversion will, therefore, show it to be very different from inference; although, in so far as the conception of tactual space-relations is involved in the total object of consciousness, inferential functions may well be admitted as accompaniments. In so far as the act is a visual one, it may be regarded, not as an inference, but as a construction of tridimensional relations which are not filled out by tactual elements of solidity; and hence the illusion is between the ideas of touch and sight, not between different objects of sight. The illusion or inversion is made easier in such cases by the absence of those real influences in actual objects which tend to give constancy and fixity to the perception,—a fact which rather favours the view that the perception of real solidity has an original element of reflex and psychical activity in vision instead of its being inferential. Hence inversion could easily take place in mathematical perspective because of the indifference of the impression to either of two possible constructions. That it is a visual perception and not an inference is still farther confirmed by the fact that the same mathematical lines would represent for inferences a large number of possible distances, requiring verification apart from sight to determine the true one; while the space-relations in visual construction and inversion have a constancy and are confined to limits which do not characterise inferences alone.

It is also possible to point out a difficulty in the argument from the parallax of motion. This supposed that the conception of the third dimension was inferred because, until the motion took place, real or apparent, the images seemed to

lie in the same plane. But, in the first place, this is not always the case, and even the apparent position in the same plane is or may often be an illusion, so that it is possible to consider this the inference, and not its natural localisation. Still more forcible is the fact that, if the consciousness of distance were solely inferential in such cases as I described, illusions ought to be frequent in regard to the perspective relation between the point of fixation and the apparently moving object when the head is moved from side to side: for, if the apparent motion is only that of images in the same plane, inference could assign to the moving image either of two positions in relation to the point of fixation, and be possibly correct. But I know of no illusion occurring here. When the fixation is upon the nearer object, there is no mistaking the greater distance of the other; and when it is upon the farther point, there is no illusion as to the nearer. This only indicates that there is a visual *quale* other than plane dimension in the visual consciousness, and may as well be called the third dimension for that sense, while it may be connected with touch by inference, and require experience to adjust it to tactual percepts.

Entoptical phenomena, as in the projection of phosphenes and the shadows of *muscae volitantes*, offer facts which can be used against the theory of inferences, although Helmholtz employs them to support his view. But to examine these carefully would require more space than I can venture to take at this stage of the discussion. There are incidents in them strongly suggestive of inference; and in their localisation with reference to each other in three dimensions, independently of their projection, connected with their different rates of motion or parallax, there are features which would readily give rise to inferences. But the localisation in these cases is so affected by the degree of focal adjustment or the object of fixation, that it is as easy to suppose the result to be one of visual construction as of inference, perhaps easier. In my own experience, I notice the same inversion of relative positions as takes place in the translocation of images, a phenomenon which we should expect in the perception of shadows: for they are analogous to mathematical figures in this respect. But the argument will not be pushed farther. It is enough to have found difficulties which require the modification of the theory of inferences.

In conclusion, it will be sufficient to remark that I am not desirous of limiting inferential processes in space-perception absolutely to the synthetic connexion of touch and

sight: for I think it even probable that they are complicated with the various phases and experiences of the individual senses. But I have desired to indicate the existence in vision of a *quale* distinct from differences of shade and colour, which may as well be called extension as not; because it is capable of being identified with a tactual *quale* of the same meaning, while the sensations proper are not so connected. If we limit visual phenomena as data to mere variations of kind and distinctness in colour, we cannot account for such cases as the appearance and inversion of mathematical perspective, binocular localisation and translocation, and the distinct effect of the monocular parallax of motion. These are qualities which are dimensional in their nature: not, perhaps, in the full synthetic scope of that term, but yet sufficiently so to deprive the theory of inferences of its empirical implications. That is all that I have desired to accomplish by my criticism. Since the qualification "unconscious," as applied to inference in Helmholtz's view, sets aside all the empirical associations attached to the accepted usage of the term "inference," I have not seen fit to consider it in the latter part of the discussion. If either the synthetic connexion of separate perceptions or the interpretation of certain signs in their meaning for other qualities in the experience of the same sense be "unconscious" processes, it is impossible to appreciate their supposed antagonism to nativism or their agreement with the opposite doctrine. Hence the conception may be dismissed from the problem. While the complexities of space-perception make the co-operation of inferential agencies very probable, yet the spacial quality must be originally given somewhere in consciousness either as an object of perception or as a mental construction, in order to furnish a basis for inferences to its existence or its relations where they are not immediately cognised. This makes the developed conceptions of abstract and synthetic space a complex of inferences and intuitions.

IV.—THE PRINCIPLE OF INDUCTION.

By L. T. Hobhouse.

In Mind No. 58 I discussed the value of the Experimental Methods, and came to the conclusion that the Method of Difference supplies us with a type of valid inference from the particular to the general. But this conclusion raises a more general question. "On what principle," it may be asked, "can you ever generalise from a true particular?" Such a process must always take you beyond your premisses, whereas true reasoning must only elicit what is already implied in the premisses. And it may be said that the objection so raised is admitted rather than answered by Mill. It is true that he proposes the Law of Causation as the ultimate principle of Inductive argument; but, when we come farther to inquire into the grounds of this Law itself, we find that it rests on a form of generalisation which undoubtedly does involve a "leap" from known to unknown, and the very nature of which, on Mill's own showing, is to proceed on no fixed or definite principle at all.

On the view which I propose in this and in a following article, all inference involves a generalisation from observed particular cases. But definite principles may be laid down on which such generalisation proceeds. The nature of reasoning, then, consisting in the assertion or application of general truths upon these principles, such generalisation involves not a "leap" unwarranted by the premisses but a regular process from the known to the unknown. Such "advance" I take to be an essential part of the reasoning process.

In the present article I shall try to find the axiom on which inductive inferences proceed. In the following article I hope to discuss the principles of deductive inference and the relation between the two forms of reasoning.

The ultimate major premiss of Induction according to Mill is, we have seen, the Law of Causation. But this Law, as he treats it, is not so much a principle tacitly or openly implied wherever we draw inductive inferences, as a wide generalisation true of sequences just as other generalisations are true of the facts of space. Hence, further, it is itself an induction like other inductions. What we want on the

other hand is an axiom expressing in general terms what we do when we make a particular statement universal, which makes explicit the truth implied by the making of any generalisation whatever, and which thus, so to say, generalises generalisation. The Law of Causation will, I think, be found to be a particular application of this wider axiom, and the axiom itself must be sought from the analysis of ordinary simple generalisations.

Now, when I connect truths together, or reason, what do I do that I leave undone in judgment? I *support* my inferred judgment by some other assertion. If I say A will —B,[1] and am asked why I say so, I answer because A was —B. If I say the clear sunset this evening will be followed by a fine day to-morrow, I give some proof of my assertion when I adduce the clear sunset of yesterday and the fineness of to-day. Now, I may be answered by a doubter upon two lines. He may say A_1 and A_2 are not really alike. Yesterday's sunset was clear in sense of cloudless, to-day's in the sense that the air is transparent. Or we may say: Yes, A_1 and A_2 are alike, but there is something beyond these which makes the difference. With yesterday's sunset went (say) a certain electrical condition of the air, and it was that which really determined the fine day. That condition is not present now. This gives us roughly the two conditions of inference, which we have now to define further.

1. A_1 and A_2 must be alike. I use the notation $A_1\ A_2$ to express that they are different facts, observed, that is, at different times or places, but that in character they are precisely similar. I say precisely, because it is only so far as they are similar that I have any basis for inference. It may be that I never get precise similarity, but I do find *points* of precise similarity, and it is from these that I argue. The terms I use in describing a fact always allow a certain latitude. I call many different shades of colour red. But the more latitude is allowed, the more difficult it is to argue with precision. If I can argue at all from one red to another, it must be because just in point of redness there is no difference between them; they are both equally red; in that point they are precisely similar. Argument, then, is precise in proportion as similarity is precise.

We may, if we like, use the word "same" to express this precise similarity. But if we do, we must observe that we intend by it something quite different from the sameness of

[1] I use the symbol — to express any sort of relation between two terms.

an individual with itself. I am the same man that I was five years ago, in one sense of the word; that is, there is a *continuity* in my existence. I am not the same man as I was then in the sense of being precisely similar, for propositions true of me then are no longer true of me now. I *cannot* infer at once from a past attribute of myself to a present one. On the other hand, the blue which I see in the picture is the same tint that I see in the sky. They are, in point of mere colour, precisely similar. They are not continuous, and one might disappear and leave the other. But what is true of the one colour as such is true of the other.

It may be asked how I can reason from one thing to another when they are not the same? That is precisely what I wish to show. I take this "advance" to be essential to real inference, and my present aim is to prove that it is made upon a single definite principle.

2. But though A_1 and A_2 are precisely similar, there may be some change in the concomitants of A, outside A. This change, again, may or may not affect B. When I infer A_2—B_2 then, I assume either that there is no such change, or that no change outside A makes any difference to B. We will consider presently what we mean by "making a difference".

3. Observe now the implication of inference. If I do argue from A_1—B_1 to A_2—B_2 I imply that A—B holds always; that given an A we shall always have a B in the same relation to it. This, of course, is the point always brought out by cross-examination:—"You think *laissez-faire* best in this case—do you think it *always* the best thing?" The implication is that, if not, you must be prepared to adduce that circumstance in the case which makes *laissez-faire* the true policy here; and this circumstance must be one which always makes it the best policy, unless, again, to take a further complication, there are special circumstances which always make in the opposite direction. Without pursuing such complication further, we see that in arguing from A_1—B_1 to A_2—B_2 we commit ourselves to the assertion A always —B, or Any A—B.

And we can, in fact, always argue from A_1—B_1 to A_2—B_2 unless there is some change in the concomitant parts which makes a difference. This formula holds of any sort of inference, from the barest analogy upwards; only, in the case of a mere analogy we have really no sort of ground for supposing that there will not be some change which "makes a difference". If I argue:—"X sat down thirteenth at table

and died within the year; you have done the same; therefore you will die,"—I pay no attention whatever to the concomitant facts. X may have been in a consumption. The consumption then is the fact that makes the difference. It was the consumption which produced X's death, and having assigned that as the cause, and discovered that it is not present here, I have no ground for the conclusion. But it remains that there must be some such fact discoverable; or otherwise the inference from A to B will hold universally. The fact in question may be something of which A is really a part, or it may be something quite separable from A, or it may be the absence of counteracting causes, or, to phrase it differently, the presence of conditions which are neutral to the effect. We will go further into these cases presently. Meanwhile we must observe that the phrase "makes a difference" requires further analysis. Such an expression involves some activity or causative power. This is really a specific conception, and we want one that is general. What we really mean when we say there must be some change which makes the difference, is that there must have been some fact which is always connected with the consequent, and which is not present now; in other words, if A is not always in the relation which we observed between it and B, then there was along with A some third fact C, which does always go with B but not always with A. As I said above, this third fact may bear any sort of relation to A: it need not be entirely separate from A, but involves more than A pure and simple. We now see that, whether we accept or reject an inference, we make the same assumption of the universality of relations and no other. In the one case we assume A—B universal, in the other some C—B.

There are then two conditions of inference: (1) that A and A_1 should be alike, and (2) that there should be no third C, other than A and the universal correlates of A, which is always in a definite relation to B. And there is a single implication in inference, namely, that the relation we are now asserting holds always. We thus see that the conditions of inference and the implication of inference rest all on one principle. *B must have some fact with which it is always in relation.* That fact may be A, and if so we can infer from A to B; but it may be C, in which case we cannot infer from A to B. It may be that A which struck us in connexion with B is the fact always related to B. If not, it is some other fact. There always is some such fact to be found. Thus in inferring to A_2—B_2 I imply A always —B; and that again

implies that there is no C always —B which is not itself always related to A.

That we should be able to reason at all, then, involves that any fact, as B, should have some other fact, as C, to which it is always related. By this is meant that any fact precisely resembling this B, whatever its other attributes and concomitants may be, will be found in a precisely similar relation to a precisely similar C. It does not involve that any A to which B happens to be related here should be always related to B. And hence the proposition which is to hold good of any two facts whatever, that are observed in any relation, must present us with an alternative. Either the relation observed holds always, or there is some other fact present in the observed case always related with one of our two facts and not with the other. Now, when we draw an inference, it is implied that the relation asserted holds always, and we see that this implies the absence of any such other fact. Hence we may put the axiom of Reasoning thus :—

If a fact A_1 is observed in any relation to a fact B_1, then any A will be in that relation to B, unless among the facts in relation to the B observed there was some fact other than A alone which is always in that relation to B in which it stood in the observed case but does not always stand in the relation to A in which it then stood.

I have here put the axiom as if A were the fact presented to us in some second case. But obviously the order makes no difference. If it were B that were presented to us we could say just the same of A.

My object in putting the axiom thus is to phrase it so that it may hold of any sort of fact, and by "fact" I mean anything that strikes our attention, and that we speak of as a fact, whether we bring it into a unity naturally or artificially. However much or however little of the "work of the mind" there may be in it, whether it be a substance, or a well-defined attribute, or the first rough apprehension of an attribute, or a statement involving a complicated system of parts, I understand this judgment to hold true of it. The word "relation" also needs a little explanation. As I use it here, I mean to assert it not only of a fact that is before or after another, or near or far from another, or like or unlike another, but also of a fact which is an attribute of another which is its substance, or which is conjoined with another as a second attribute of the same substance, or as a second aspect of a complex mass of facts. I hold a relation to exist between two facts whenever the mind can at once

distinguish the facts as two, and at the same time attend to them together and assert something of them considered together.

To illustrate my meaning, let the observed relation be exposure to cold followed by inflammation on the lungs. Here A is exposure to cold. Now I am quite aware that such a fact as this cannot exist in isolation. It was of course a particular concrete case of the exposure to cold of a particular person. Quite so; but *all we may know of it* may be quite adequately represented by the bare words "exposure of a man to cold". Of course the more I know of it the better for my powers of drawing inferences, but as soon as I begin to know such a bare fact as those words express I begin to have some basis for reasoning. The same remarks apply to the term B. Hence without knowing anything more of A and B than is expressed by such words as are used above, and the fact that B did follow A, I can say that in this case again, or in any case, B will follow unless in the first case B was related to some third, C. Now this third, C, might be something quite apart from A: it might be, for instance, the continual inhaling of iron dust; or again, it might involve A and something more, *e.g.*, it might be exposure to cold following great heat and in an exhausted condition on the part of a man with weak lungs. To get at the whole fact which would really and strictly be *always* followed by inflammation of the lungs, we should doubtless have to go through something very complex. But in the broad sense I have given to the word "fact," with the object of abbreviating the formula, it would hold that *some* fact could be found always related to the fact inquired about.

Let us take another case: a pistol-shot, A, caused death, B. Now a pistol-shot might not cause death. What does cause death? Let us say a projectile aimed in one or other of certain definite directions and with not less than a certain energy. If I shoot a man and aim straight at his brain or his heart and am near enough for the ball to penetrate, I shall kill him. Thus I can find a fact standing in universal relation to my B. But it is not something out of all relation to A. A, the pistol-shot, is a vague phrase expressing one aspect of the whole fact—the aspect which would first strike a bystander. The C which is really connected with B involves A and something more. The whole fact can be analysed of course into any number of "latent processes," and again has any number of aspects. Now A is just that

aspect which happens to have struck us. C is here some fuller account of the whole fact.

Again, "This oxygen has an atomic weight of nearly 16. Any oxygen will have the same." The assumption here is that there is no further fact to be taken into account. It is merely as oxygen that the substance has the assigned atomic weight. There is nothing that can make a difference, and the relation must always hold. And this illustrates the way in which I wish the term "relation" to be understood in the formula above given. I speak of a *relation* existing between oxygen and its atomic weight. Of course I do not mean that they are in any way separate existences, but they are different aspects of the same existing thing, and may come before us at different times. We may thus speak of a relation of coherence between them, knowing at the same time that such a coherence constitutes the whole thing a unity.

In a purely frivolous or false inference, the C which is really in relation to B is something quite foreign to A. If, to take Grote's instance, I assert that on the day of the battle of Salamis rain fell on the site of New York, and if I were to go further and say that therefore if another battle were fought at Salamis rain would again fall on that site, the obvious answer is that the rain depended on meteorological conditions quite foreign to the political causes which led up to Salamis, *i.e.*, there is a third C totally disconnected with A. If, again, because the battle of Himera was fought on the same day as Salamis or at least about the same time, I were to expect a similar conjunction to repeat itself, I should be very far out, though not quite so far as before. For the conjunction of Himera and Salamis may have been remotely due to some correspondence between Persia and Carthage. The cause of Himera, then, was remote from that of Salamis, but not, so to say, infinitely remote. I should have to insert a great number of links connecting my A and my C before I could infer universally. I should have to observe the repetition of a great number of military and political conditions.

If we now develop our axiom for a while, we shall see that certain broad cases of its application may be distinguished, and we may with advantage restate it in view of them. The first and most important distinction is between cases where the third fact C, the fact that is always accompanied by B, is a fact which includes A or is closely related to A, and those in which it is not. The first case will give us good ground for inference as a general rule,

though it will not give absolute certainty. The second allows us no ground for inference at all.

The first case would be represented in the instance above given by the man who caught inflammation from exposure under special circumstances; the second, by the man who was indeed exposed to cold but in fact caught his illness from inhaling iron dust. A still better instance of the first case is afforded by mechanical pressure. Let a force P act on a body at A in the direction AB; we may infer that the body will begin to move in the direction AB unless there are some other forces acting on it in the contrary direction. In other words, the case of inference which we are now considering is that in which counteracting causes are possible; in which we have one or more main determinants of the fact B, but the whole complex of conditions is not given us. Restating the axiom from this point of view, we get a double distinction.

If A_1—B_1, then

Either any A—B, as *e.g.*, A_2—B_2,
Or with A was some third C which always —B,
Or with A_2 will be some third D which always — absence of B.

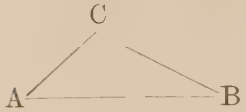
Before showing how the axiom in this form can be brought into relation with the Inductive Methods, I want to meet in advance a criticism which might be passed upon it as here given. It may be said my symbol (—) is so vague that it would comprehend any relation in the universe; or, if for it I substitute "coexists with or is followed by," that I am not much better off unless I specify the limits of space or time within which the coexistence or sequence must take place if it is to affect our inference. In other words, such an expression as "in the case observed there was a third fact C" is either so vague as to be of no service, or else implies that I have already isolated a certain group of facts from the surrounding universe and know that I need not consider the rest. To escape from this dilemma, it is, I think, only necessary to state the axiom with greater accuracy, if also more clumsily:—

If a fact A_1 is observed in any relation to another fact B_1, then either any other A_2 will be in the same relation to B_2; or with A_1 and B_1 was a third fact C which always stands in the relation to a B in which it there stood; or in relation to A_2 there is a third fact D which in such a relation to A is always so related to a fact E, unlike B, that E will occupy a relation to A_2 similar to that occupied by B_1 to A_1 in the case observed.

To illustrate this complicated statement, let us use a graphic method representing a relation now by a straight line of definite length and direction. We have :—

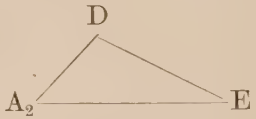
(1) A_1 ——— B_1, A_2 ——— B_2

(2)



Here the relation C—B holds always, but we know nothing of A—C. Therefore, given A again, we have no reason to infer B.

(3) A_1 ——— B_1

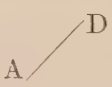


Here we should have A——— B if it were not for D, but

D

E

is a relation which *always* holds, hence, if we have the relation



, the relation

will bring E into the precise place previously occupied by B. For instance, supposing A is a force acting on a body in a given direction, and B is the resulting movement when A acts alone, then D would be an equal and opposite force. Now if D does not act on the same body at the same time it will not, of course, counteract A ; but if it does so act the result will be equilibrium, E, instead of the movement B. Then to secure true counteraction of B, D must be in a definite relation to A : it must act at the same moment on the same body.

I have, I think, said enough to show that the three alternatives afforded by the Axiom as thus stated correspond to the three cases in which A is the "sum of the conditions of B," or in any way a universal correlate of B ; in which it is the cause of B in the popular sense of the term ; and in which its connexion with B is merely "casual". In other

words, the Law of Causation is the Axiom of Reasoning as applied to the sequences of phenomena.

I have not space to exhibit the connexion of the Axiom with many forms of reasoning, but I wish to show its application to one form in particular—the Method of Difference.

How does the Axiom help us in dealing with the Method of Difference? In a very simple way; the method proves that there is no third C universally related to B. We have, under a rigid application of the method,

A*cdecde*.
B*fghfgh*.

Now this proves that none of the concomitants of A (*viz.*, *cde*) are universally related to B. In other words, we have a case in which A is followed by B without the presence of any third C, which is always related to B. Hence A will always be followed by B unless we have counteracting causes. The Method of Difference, then, is simply a particular application of our Axiom.

But we have to remember Mr. Bradley's exposition of the defects of the Method. It might be that, though *cde* would not produce B without A, A in its turn would not produce B without them, or some of them. Then it would be true that there would be no third C altogether apart from A which would produce B, and yet not true that A would always produce B. To save our Axiom, we should have to regard the absence of *cde* as a counteracting cause. But this would generally be very far-fetched, and an unfruitful way of looking at it. Let us then modify the second alternative of our axiom, thus :—

Either A will always be in that relation to B, or there is a third C which either is always in the relation which it here holds to B, or whenever it is in the relation which it here holds to A is in the relation which it here holds to B.

This statement gives us the distinction popularly drawn—and, like most popular distinctions, resting on a fundamental truth—between cause and condition. The first subdivision of my second alternative makes C the cause of B, and leaves A nothing to do with it. It is this which is eliminated by a single application of the Method of Difference. The second subdivision leaves it open for C to be a joint condition of B, together with A. If C is not really such, that may be proved by repeated applications of the Method. Thus, summing up, one good instance under the Method proves that A is followed by B without being accompanied by any third fact

which is always followed by B, whether or not A is present. Repeated instances may prove that A is followed by B, whether or not any other conditions are present.

I can argue then from any fact of observation, provided that fact gives me in some way or other the means of sifting it. But I can do this, because any and every fact observed stands in universal relation to some other fact. I start from particulars, and I reason about them, but the reasoning itself is the assertion of a universal. It is the judgment that certain facts are always in such and such a relation. This judgment is implied in the rudimentary inference which states only the particular fact observed and the particular fact now expected. It is explicit in the reason that is conscious of its own grounds and methods, and takes there the form of the universal judgment, or major premiss.

I may be asked, "How can we ever outside mathematics attain to propositions so rigidly universal? There is always a chance that we may be deceived." There is. And to go into the whole question of Chance, and the relation of its assumptions to the assumption of reason, is out of my power here. At present, I can only repeat what I have said before of chance—that, though, in fact, chance does interfere with our reasoning, still reasoning can and does go on, and I am concerned here with the implications of reasoning alone. The "simple enumerations" on which most of our "judgments of allness" depend rest, of course, on the Law of Chances. They are to be accepted so far as the instances taken have been diverse, numerous, and "random" enough to eliminate chance. In fact the statement of allness according to our Axiom would mean primarily that we had reason to believe that there was no third factor in the instances observed that was responsible for the relation found in them. The assumption of a Simple Enumeration is that we have observed A and B together so many times that the chances are against the combination being casual—that is, due to some third C. The repetition of the instance guarding us more or less (according to the nature of the instances) against this, we are enabled to draw an inference.

Leaving, for the present, the question of chance, I must say a word in conclusion on the question of the proof of our Axiom. Mill held that the Law of Causation could be proved by a simple enumeration. Now, his law of causation is the axiom of reasoning as applied to sequence. Let us then

apply his proof to our axiom. The axiom holds good in cases a, b, c, d . . . , therefore it holds good in all cases. Therefore? Why? Because that which holds good in many cases will hold good in all. But that is precisely what our axiom asserts. Our axiom is, that what holds once will hold always, unless something makes a difference. We have then used our axiom as major and conclusion in the same syllogism.

If there is any axiom involved in reasoning it can never be proved by reasoning. The only kind of test of which it is susceptible is the test of self-consistency in all its applications. If we could find a case in which it could be proved not to hold, it is true that we should be using the axiom itself to prove its own nullity, but still we should be bringing ourselves by that very fact to an inconsistency, and should be certain that somehow we had got wrong. On the other hand, so far as we find it applying and "coming out right," we get a certain test of its truth. And this should be carefully noticed, that it is one thing to speak of proving the Axiom of Induction, and another to show that a particular formula is that axiom. There we are liable to mistake, and therefore we not only can but must attempt to prove. We cannot set up dogmas of our own and say these are the axioms of reasoning, and therefore above proof. We must prove that they are in fact the statement of that which is implied in reasoning. I have tried to do this by the analysis of some simple inferences, and my main conclusion is that a definite principle can be laid down on which we form our generalisations from the particular cases that we observe.

V.—THE UNDYING GERM-PLASM AND THE IMMORTAL SOUL.

By Dr. R. von Lendenfeld.

[The following article appeared originally, last year, in the German scientific monthly, *Humboldt*. It is reproduced here (by permission)—the English from the hand of Mr. A. E. Shipley—as a specimen of the kind of general speculation to which modern biology is giving rise.—Editor.]

To Weismann is due the credit of transforming those vague ideas on the immortality of the germ-plasma, which have been for some time in the minds of many scientific men, myself amongst the number, into a clear and sharply defined theory, against the accuracy of which no doubt can be raised either from the theoretical or from the empirical stand-point. This theory, defined as it is by Weismann, has but recently come before us, and some time must elapse before all the consequences which it entails will be evident. But there is one direction which I have for some time followed, and indeed began to think out long before Weismann's remarkable work showed the importance of this matter. I mean the origin of the conception of the immortal soul.

Before I approach the solution of this problem, it may be advisable to recall in a few words to my readers the theory of the immortality of the germ-plasm.

All unicellular beings, such as the Protozoa and the simpler Algæ, Fungi, &c., reproduce themselves by means of simple fission. The mother-organism may split into two similar halves, as the Amœba does, or, as is more common in the lowest unicellular plants, it may divide into a great number of small spores. In these processes it often happens that the whole body of the mother, the entire cell, may resolve itself into two or more children; at times, however, a small portion of the mother-cell remains unused. This remnant, in the spore-forming unicellular plants represented by the cell-wall, is then naturally dead.

From this it follows that these unicellular beings are immortal. The mother-cell divides, the daughter-cells resulting from the first division, repeat the process, the third generation does the same, and so on. At each division the mother-cell renews its youth and multiplies, without ever dying.

External circumstances can, of course, at any moment bring about the death of these unicellular organisms, and in reality almost every series of beings which originate from one another in this way, is interrupted by death. Some, however, persist. From the first appearance of living organisms on our planet till to-day,

several such series—at the very least certainly one—have persisted.

The immortality of unicellular beings is not at any time absolute, but only potential. Weismann has recently directed attention to this point. External occurrences may at any moment cause the death of an individual, and in this way interrupt the immortal series; but in the intimate organisation of the living plasma, there exist no seeds of death. The plasma is itself immortal and will in fact live for ever, provided only external circumstances are favourable.

Death is always said to be inherent in the nature of protoplasm. This is not so. The plasm, as such, is immortal.

But a further complication of great importance affects the reproduction and the rejuvenescence of these unicellular organisms; this is the process of conjugation. Two separate cells, distinct individuals, fuse together. Their protoplasmic bodies not only unite but intermingle, and their nuclei do likewise; from two individuals one results. A single cell is thus produced, and this divides. As a rule, this cell seems stronger than the single individual before the union. The offspring of a double individual, originated in this way, increase for some time parthenogenetically by simple fission without conjugation, until at length a second conjugation takes place amongst them. I cannot consider further the origin of this universally important process of conjugation. I will only suggest that a kind of conjugation may have existed from the very beginning and may have been determined by the original method of reproduction, if such existed.

At any rate conjugation has been observed in very many plants and animals, and is possibly universally present in the living world.

Conjugation does not affect the theory of Immortality. The double individual produced from the fusion of two individuals, which divides and lives on in its descendants, contains the substance of both. The conjugating cells have in no way died during the process of conjugation; they have only united.

If we examine a little more closely the history of such a "family" of unicellular beings from one period of conjugation to the next, we see that a great number of single individuals, that is, single cells, have proceeded from the double individual formed by conjugation. These may all continue to increase by splitting in two, and then the family-tree is composed of dichotomously branching lines; or they may resolve themselves into numerous spores, and then the family-tree exhibits a number of branches springing from the same point.

The majority of these branches end blindly with the death, caused by external circumstances, of that individual which corresponds with the branch. Only a few persist till the next period of conjugation, and then unite with other individuals and afford the opportunity for giving rise to a new family tree.

All the single individuals of such a genealogical table belong to one another, even though they be isolated. Amongst certain Infusoria and other Protista, they do, in fact, remain together and build up branching colonies. At the end of each branch is situated an Infusorian (Vorticella), and the whole colony represents in itself the genealogical family tree.

In the beginning, there existed no other animal organisms than these aggregations of similar unicellular beings, all of which reproduced themselves. Later on, division of labour made its appearance amongst the individuals of the animal colony, and it increased their dependence upon one another, so that their individuality was to a great extent lost, and they were no longer able to live independently of one another.

By the development of this process, multicellular Metazoa arose from the colonies of similar Protozoa, and at length culminated in the higher animals and man.

If we examine the human body, its origin and end, in the light of these facts, we shall see that a comparison between the simple immortal Protozoa and Man leads us to the result, that Man himself, or at least a part of him and that the most important, is immortal.

When we turn to the starting point of human development, we find an egg cell and a spermatozoon, which unite and whose nuclei intermingle. Thus a new cell is produced. This process is similar to the conjugation of two unicellular beings, such as two acinetiform Infusoria, one of which, the female (♀), is much larger than the other, the male (♂). This difference of size in the conjugating cell is however without importance.

From this double cell produced by conjugation many generations of cells arise by continual cell-division in divergent series. Amongst the Infusoria these are all immortal, but many of them are destroyed, and only a few persist till conjugation again takes place. The same is the case with man. Numerous series of cell-families arise, which are all immortal: of these but few—strictly speaking, only one—live till the next period of conjugation and then give the impulse which results in the formation of a new diverging series of cells. The difference between man and the infusorian is only that in the former the cells which originate from the double cell (the fertilised ovum) remain together and become differentiated one from another, whilst in the latter the cells are usually scattered but remain alike in appearance, &c.

The seeds of death do not lie, as Weismann appears to assume, in the differentiation of the cells of the higher animals. On the contrary, all the cell-series, not only those of the reproductive cells, are immortal. As a matter of fact all must die; not because they themselves contain the germs of death and have contained them from the beginning, but because the structure which is built up by them collectively, finally brings about the death of all. The living plasm in every cell is itself immortal. It is the higher

life of the collective organism which continually condemns countless cells to death. They die, not because they cannot continue to exist as such, but because conditions necessary for their preservation are no longer present.

Thus, whilst the cells are themselves immortal, the whole organism which they build up is mortal. The complex interdependence between the single cells, which, since they have adapted themselves to division of labour, has become necessary, carries with it, from the beginning, the seeds of death. The mutual dependence ceases to work, and the various cells are killed.

The death of the individual is a consequence of the defective precision in the working of the division of labour amongst the cells. This defect, after a longer or shorter time, causes the death of all the cells composing the body. Only those which quit the body retain their power of living.

Of all those countless cells which, in the course of a lifetime, are thrown off from the body, only one kind is adapted for existence outside the body, namely, the reproductive cells.

Amongst the lower animals the reproductive cells often leave the body of their parents only after the death of the latter. This is not the case in man.

All the cell-series which do not take part in the formation of reproductive cells, as well as all the reproductive cells without exception, or with only a few exceptions, die through unfavourable external conditions; just as all, or almost all, of the Infusoria which arose from the double cell, die before they can conjugate again.

At times, however, some of the Infusoria persist till the next period of conjugation, and in the same way, from time to time, some of the human reproductive cells succeed in conjugating, and from them a new individual arises.

A man is the outgrowth of the double cell produced from the conjugation of two human reproductive cells, and consists of all the cells which arise from this and remain in connexion with each other. The human individual originates at the moment of the mingling of the nuclei of the reproductive cells; and the details of this mingling determine his individual peculiarities.

The end of man is manifestly to preserve, to nourish, and to protect the series of reproductive cells which are continually developing within him, to select a suitable mate and to care for the children which he produces. His whole structure is acquired by means of selection with this one object in view, the maintenance of the series of reproductive cells.

From this standpoint the individual loses his significance and becomes, so to speak, the slave of the reproductive cells. These are the important and essential and also the undying parts of the organism. Like ravelled threads whose branches separate and re-unite, the series of reproductive cells permeate the successive

generations of the human race. They continually give off other cell-series which branch out from this network of reproductive cells, and, after a longer or shorter course, come to an end. Twigs from these branches represent the human individuals, and anyone who considers the matter must recognise that, as was said above, apart from the preservation of the reproductive cell series the individuals are purposeless.

It is on this basis that the moral ordering of the world must place itself if it is to stand on any basis at all. It is an easy and a pleasant task to interpret the facts of history from this standpoint. Everything fits together and harmonises, and each turn in the historical development of civilisation when observed from this point of view acquires a simple and a clear causality.

I cannot enlarge on this topic, engaging as it is, but here a further question obtrudes itself. May there not be some connexion between the actual immortality of the germ-cells, the continuity of their series and the importance of the part they play, and the origin of the idea of an Immortal Soul? May not the former have given rise to the latter?

As a matter of fact, the series of reproductive cells possess the essential attributes of the human soul: they are the immortal living part of a man, which contain, in a latent form, his spiritual peculiarities. The immortality of the reproductive cells is only potential and is essentially different from that absolute eternal life which certain religions ascribe to the soul.

We must not, however, forget that at the time when the conception of a soul arose amongst men, owing to a defective knowledge of the laws of Logic, no clear distinction was made between a potential immortality and an absolute life without end.

Herbert Spencer has pointed out that all religions have their origin in reverence paid to ancestors. Each religion must have a true foundation, and the deification of our forefathers has this true and natural foundation inasmuch as they belong to the same series of reproductive cells as their descendants. Of course our barbaric ancestors who initiated the ancestor-worship had no idea of this motive for their religion, but that in no way disproves that this and this alone was the *causa efficiens* of the origin of such religions. It is indeed typical of a religion that it depends upon facts which are not discerned and which are not fully recognised.

With the origin and development of every religion the origin and development of the conception of the soul progresses step by step.

We find the justification of ancestor-worship in the immortality of the reproductive cells, and in the continuity of their series. This should also take a part in the origin of the conception of the soul.

Spencer derives the conception of the existence of the soul from dreams, and from the imagination of the mentally afflicted. The savage dreams he is hunting, and wakes up to find himself at home. In his dream he talks with friends who are not present where he sleeps; he may even in the course of his dream encounter the dead. From this he draws the conclusions—(1) that he himself has two persons, one hunting whilst the other sleeps; (2) that his acquaintances also have a double existence; and, from those cases in which he met with the dead, (3) that they are not only double persons, but that one of the persons is dead whilst the other continues to live.

Thus, according to Spencer, the idea arises that man consists of two separable thinking parts, and that one of these can survive the other.

When a person faints and recovers, we say he comes to himself. That is, a part of his person left him and has returned. But in this case, as in the dream, the body has not divided, so that in a swoon the outgoing portion is not corporeal.

The savage will think that this is what remains alive after death, for he is incapable of distinguishing between a swoon and death. Then he will associate the part which leaves the body during a swoon with that which gives life, and some will regard the heart, which fails to beat after death, and others the breath, which ceases when life does, as this life-giving part or soul.

Thus far I am quoting from Spencer.

The conception of the soul, which has thus arisen, has been utilised by astute priests to obtain power over their fellow-men; whilst the genuine founders of religions have made use of it, and by threats of punishment, and promises of reward, have tried to induce mankind to live uprightly.

With this purpose in view, the teachers of religion have changed the original conception of the soul and have added to it the attribute of absolute immortality and eternal duration, an attribute which is in no way connected by people in a low state of development with their conception of the soul.

At the present time amongst the religions of all civilised people the undying soul plays an extraordinarily important part.

I start from the position that no doctrine can receive a general acceptation amongst men which does not depend on a truth of nature. The various religions agree on one point, and this is the doctrine of the immortal soul. Such a point of universal agreement, I am convinced, cannot have been entirely derived from the air. It must have had some foundation in fact, and the question arises, What was this foundation? Dreams and phantasms, as Spencer believes? No, there must have been something real and genuine, and the path we have entered upon to find traces of this true foundation of the conception of the soul cannot be distrusted.

We must compare the conception of the soul as held by various

related religions, and strip off from it all those attributes which are not common to all. But those which all the various religions agree in ascribing to the soul, we may regard as its true attributes.

It would take too long to go into the details of this examination of the conception of the soul. As the general result of a comparison of the various views of the soul we may put down the following characteristics which are invariably ascribed to it:—

(1) The soul is living.
(2) It survives the body, and can continue to exist without it.
(3) During life it is contained in the body, but leaves it after death.
(4) The soul participates in the conduct of the body: after the death of the latter, causalty (retribution) can still affect the soul.

The characteristics (1) to (3) hold also for the series of reproductive cells continually developing within the body; and these attributes of the germ-cells may well be the true but unrecognised cause of the origin of those conceptions of the soul's character.

This like holds true for (4), although the connexion is not so obvious. For this reason, it will be advisable to consider the point in more detail.

It has been already indicated that the founders of religions have made use of the survival of the soul after death to endeavour to lead mankind to live righteously, by threats of punishments or promises of reward, which will affect the soul after the death of the body.

It is precisely on this point that in the most highly developed religions there is the greatest falling-off from the original conception of the after-effect of human conduct on the soul, and the most astounding things are inculcated by the Koran and other works, with respect to this.

But here again we may separate the true kernel from the artificial shell, and reach the conclusion that good conduct is advantageous for the soul after the death of the body, and that bad conduct is detrimental. In no other way can the Mohammedan paradise or the Christian hell be explained than as sheer anthropomorphic realisations of these facts, which can appeal even to the densest intellect.

What then is good conduct, or bad?

The question is easily asked, but without reference to external circumstances impossible to answer. *Per se* there is no good or bad conduct. Under certain circumstances a vulgar, brutal murder may become a glorious and heroic act, a good deed in the truest sense of the word; as, for example, in the case of Charlotte Corday. Nor must the view of one's fellow-creatures be accepted as a criterion of good or bad conduct, for different parties are apt to cherish diametrically opposed opinions on one

and the same subject. There remains then only one's own inner feeling or conscience. Good conduct awakes in this a feeling of pleasure, bad conduct a feeling of pain. And by this alone can we discriminate. Now let us further ask, what sort of conduct produces in our conscience pleasure, and what sort of conduct induces pain? If we investigate a great number of special cases, we shall recognise that conduct which proves advantageous to the individual, to the family, to the state, and finally to mankind, produces a good conscience, and that conduct which is injurious to the same series gives rise to a bad conscience. If a collision of interests arise, it is the degree of relationship which determines the influence of conduct on the conscience. As, for instance, amongst the clans in Scotland, a deed which is advantageous for the clan produces a good conscience, even if it be injurious to the state and to mankind.

The conscience is one of the mental faculties of man acquired by selection and rendered possible by the construction and development of the commonwealth of the state. Conscience urges us to live rightly, that is, to do those things which will help ourselves and our family, whereby our fellow creatures according to their degree of relationship may be benefited. These are good deeds, and they will merit from the teachers of religion much praise for the soul. We find, therefore, that the only possible definition of a good deed is one which will benefit the series of germ-cells arising from one individual, and further which will be of use to others with their own series of germ-cells, and that in proportion to the degree of connexion (relationship).

It is clear that in this point also the ordinary conception of the future fate of the soul agrees fundamentally with the result of observation on the prosperity of the series of germ-cells.

As all the forces of Nature, known to the ignorant barbarian only by their visible workings, call forth in him certain vague and, therefore, religious ideas, which are but a reflexion of these forces in an anthropomorphically distorted form, so the apparently enigmatical conception of the eternal soul is founded on the actual immortality and continuity of the germ-plasma.

VI.—CRITICAL NOTICES.

The Psychology of the Belief in Objective Existence. Part I. "*Objectiva* Capable of Presentation". By Julius Pikler, Doctor of Political Science, Lecturer on Philosophy of Law in the Royal University of Budapest, &c. London: Williams & Norgate, 1890. Pp. 118.

Dr. Pikler's essay, mentioned in the last No. of Mind, p. 571, is a still more carefully reasoned piece of work than it seemed at first sight. Taken along with Mr. Stout's earlier-published but later-written article on "The Genesis of the Cognition of Physical Reality" in No. 57, it prompts to return upon a subject that had previous discussion here under title of "The Psychological Theory of Extension" (Nos. 51-3), but which at starting (No. 51, p. 418), might have been as well designated "The Psychological Theory of Sensible Object". This at all events, is the topic which I hope, before long, to take up again in Mind and to treat more adequately than in the two or three pages of general indication offered before. Dr. Pikler gives special occasion for such return, because nobody is so express and decided as he in maintaining a position which, so far as I can still see, is in the scientific point of view seriously mistaken. Thus, at p. 38, he declares that "our belief in the objective existence of matter or things arises only in consequence of our belief in the objective existence of space," which he makes the subject of prior psychological explanation. Apparently he attaches no importance, if he gave any attention, to the particular line of argument here advanced in a sense precisely opposite. That is a reason, added to one's failure to make serious impression upon the others (Mr. Ward and Prof. James), against whom at the time the argument was more especially pointed, for trying to restate it in more effective form. But, since the question is to be limited to Sensible Object (though that may turn out to involve a good deal more), it will simplify matters as regards Dr. Pikler, who must henceforth be considered among the foremost authorities on the whole subject, to give beforehand some account of the more general scope of his essay. Open, as I think, to exception both in principle and result, it is yet in more ways than one a very remarkable production.

It is, first of all, remarkable as written in English by a Hungarian hand. Whether his choice of language has been made from an opinion of the superior pliability of English to pyschological uses or because the problem of the essay has so largely occupied the attention of English thinkers, Dr. Pikler's readers may thank him for it; nor does he suffer by the choice. Though his sentences are at times rather laboured or even awkward,

they do not fail at other times to be singularly pointed and effective; and, marked as his thought not seldom is by almost an excess of subtlety, it is really interesting to note how he always manages to make plain his meaning even to its finest shades. But, however it be with his means of expression, there is no question of Dr. Pikler's special indebtedness to the psychological work of the English school. This is manifest throughout from the very freedom with which he criticises its chief representatives. To J. S. Mill in particular, despite all difference, he stands in such close relation that his whole theory, so far as yet expounded, may be described as an effort to give full and satisfactory development to Mill's well-known doctrine in the *Examination of Hamilton*. And it is an effort that may be welcomed, as well as judged on the whole successful, even by those to whom the right solution of the object-problem does not seem attainable on Mill's lines.

What most distinguishes Dr. Pikler from Mill and the other English psychologists is the generality with which he conceives the problem. More careful than they to mark it off from the question of perception (to distinguish, *e.g.*, between the mere perceiving of space and the belief in its objectivity), he is still more decided on the point that the problem is not exhausted with an opposition of matter and mind. His own fundamental division of *objectiva* is into the two classes of—(1) capable, (2) incapable, of presentation; and each includes for him a large variety of particular cases. In the present volume, only the first class of objectives is covered; the question of belief in the existence of minds and other unpresentables being left over for future handling. He maintains that the psychological problem of material object can be completely solved without reference of any kind to other consciousness than that of the individual subject. But, whereas Mill, with whom he shares that opinion, took up, at the prior stage, only the question of the external world, Dr. Pikler finds this to be but one of a number of equally presentable objectives, and by no means the first of them to call for scientific regard. Not only, as already mentioned, does he put the question of space (and time) before matter, but, prior to time and space as objects, he holds that we may become conscious of objective attributes pertaining to our bare (subjective) presentations; and he charges it against all previous psychologists that they have overlooked this true beginning of a science of object. It is not surprising, then, that, working up from such a depth, he should not stop short with the material things of sense, but should bring within his theory of presentable object the "existence of cognitions (beliefs, memories, ideas)," and also such facts as that we can ascribe an "objective intensity" to presentations other than what we may be (subjectively) experiencing, or, again, that we may speak of mental states as actually or objectively present though "unconscious".

Nothing but praise is due for the care with which it is thus sought to muster together all the different classes of objectives agreeing in presentability. And, if the enumeration, as a whole, stands good, whether in Dr. Pikler's or in any other order, he must be allowed to have made a sensible advance in treatment of the object-problem with his fundamental distinction of presentables and unpresentables. It is less clear that he is right in thinking that this or that particular class of presentable objectives has been overlooked altogether by his predecessors. He asserts this especially of his first class—what he calls "attribute-presentations" or "objective attributes of our presentations". There are, in his view, eight of these altogether, as he thinks well—though his immediate task does not require it of him—to mention (p. 19): resemblance or difference, time-relation, local (space-) relation, duration, intensity, extension (*sic*), position, number. It cannot very seriously be maintained that these (or at least some of them) have not been recognised by psychologists as having a certain objective character abstracted from the (subjective) presentations to which they can be attributed. But it is of more interest to ask whether such objective character is so well and clearly marked as to be made, with Dr. Pikler, the prerogative instance of objective experience.

Dr. Pikler's reason for putting first this class of objectives is not expressly stated, but may be guessed with sufficient probability. The psychological problem of objectivity is, in spite of some rather ambiguous language at starting, rightly conceived by him as a question of how presentations, which are essentially facts of subjective experience, come to appear as having an existence (or subsistence) apart from the mind's perceiving. Now if (subjective) presentations, without ceasing to appear to be such, can be shown to have certain fixed attributes, whether intrinsically or in their relation to one another, that are not in the same way subjective as the presentations themselves, this fact would seem to be objectivity at the first remove, and to require, as well as admit of, explanation before any other part of the whole problem. But, should this be allowed, and the question as to space and body be then made to follow, one does not very well see why Dr. Pikler's later classes of objectives, which all have reference to phases of subjective consciousness, should not also be explained before the interpolated cases of "time and space" and "the external world". Can it however be allowed that the treatment of the whole problem should be so begun? Surely not. Be it as it may between space and body (of which more anon), it is not to be doubted that only after we have apprehension, somehow, of an external world is there any express consciousness of presentations or representations as facts of subjective experience, in which may then be remarked attributes or phases with a character of relative independence and fixity. The attempt, in short, by Dr. Pikler to work out a complete scheme of presentable objectives,

whatever its general merit, results in an ordering that can hardly be called other than highly artificial. It neither corresponds with the (historical) order of actual development in any consciousness; nor, by placing some of its later terms so far apart from the first, does it satisfy the requirements of an order of logical development. The two points of view—logical and historical—are, in fact, confused in Dr. Pikler's scheme. I take leave to say this, in spite of his careful distinction, at starting, between the *meaning* and the *genesis* of belief in objective existence. His treatment of "the genetic question" in one chapter at the end of the present essay understands this in a far too limited sense and is besides of a rather perfunctory character; while his remark quoted above from p. 38 shows him, in practice, not by any means careful enough to keep out an admixture of genetic considerations at the analytic stage.

A word now on Dr. Pikler's principle of explanation for all cases alike of presentable objective. Belief in such objective existence is, he holds, belief in one's ability to obtain this or that kind of presentation at will. Here may first be acknowledged, over again, the seriousness with which he conceives his psychological task. The essential meaning of objective—however afterwards aggrandised, in some cases, by reference to a common consciousness of different minds—may and should, he thinks, admit of being accounted for in terms of individual consciousness. Nor, in limiting his means of explanation to psychical fact or process of the most immediately personal kind, does Dr. Pikler at all minimise the problem. It is a true objective, independent of the individual's consciousness, which he is concerned to evolve from the consciousness of the individual. This is to take the psychological question seriously. And it need not be denied that a consistent meaning for presentable object may be found in Dr. Pikler's terms. Indeed, as he puts it, the assertion is little, if at all, more than an identical proposition. Whatever is by me *presentable* object in the world without, or whatever in the world within I may be ready to call *objective* because of its determinate possibility—*sc.* practicability—of presentation, is, in so many words, something that I can through act of will come to have a presentative experience of. If, on the other hand, the assertion be understood to have real import, it has hardly waited for Dr. Pikler to be made. Prof. Bain, for example, has told us (*Mental and Moral Science*, p. 199), as regards the external world, that "our object-experience consists of the uniform connexion of definite feelings with definite energies," and, in the wider reference to object in general, has given his well-known analysis of Belief under the head of Will. Obversely; it is cleverly urged by Dr. Pikler that the most distinctively 'subjective' of all experiences—our state of good or bad humour—is just that over which we have least voluntary control. It may be allowed, then, that there is no difficulty in putting such an interpretation upon

'presentable object' as Dr. Pikler seeks to carry through. But the question remains whether this is the primary and most natural interpretation—whether the notion of a 'possibility' of experience through will of mine is not secondary to the notion of a 'necessity' of experience which, in given circumstances, no will of mine can overcome. What says Dr. Pikler himself, at p. 71, when arguing that a man's "own world of memories and beliefs" is as truly objective for him as that external world which is common to him with others? "The particular parts of it are just as well defined, and exist *objectively as independently of our will*, as the particular things of the external world." The words I here italicise, falling so naturally from Dr. Pikler's pen, are in curious conflict with the theory he works out in the essay. And note, too, the bearing of the last clause of the sentence. "The particular things of the external world" are, for Dr. Pikler also, so much the type of what is truly objective that it lies to hand to remark that, by his own allowance here, the solution of the psychological problem of object should start therefrom. But, however much one may be concerned, on another occasion, to urge this point, it would be wrong to part from Dr. Pikler now and not repeat with emphasis that his treatise, as a whole, must henceforth be very carefully reckoned with by anybody who would essay the crowning question of psychology.

EDITOR.

The Croonian Lectures on Cerebral Localisation. Delivered before the Royal College of Physicians, June, 1890. By DAVID FERRIER, M.D., F.R.S., &c. London: Smith Elder & Co., 1890. Pp. v., 152.

In the last course of Croonian Lectures Prof. Ferrier brings under review and criticism the main facts of Cerebral Localisation. In the first edition of the *Functions of the Brain* he announced certain definite results, which in the second edition (1886) he developed somewhat and by repeated experiment sought to confirm: in the meanwhile he had discussed the growing details in the Gulstonian Lectures (1878), published under the title of *The Localisation of Cerebral Disease*. (See MIND ii. 92, iv. 137, xii. 132.) Now, in these Croonian Lectures, besides giving yet further facts and experiments, critically stated, he collates the results of recent research (by Horsley, Schäfer, Munk and others), and brings them to the elucidation of his own principal positions. It is important to have these periodical reviews from Prof. Ferrier, because long ago he committed himself to certain definite doctrines on fundamental topics: his argument always keeps close to his facts, experimental or clinical, and, if his hypotheses are not always unassailable, his method of presenting them gives material for independent judgment.

The first lecture presents the general facts of cerebral localisa-

tion in their historical setting. The sensory centres—visual, auditory, tactile, olfactory—are treated in four closely packed lectures; and the sixth and last lecture discusses again in the light of the latest experiments the theoretical problems, now familiar, of the motor areas, the relations of spinal and cerebral motor centres and the positive experimental knowledge of the frontal lobes. Prof. Ferrier presents nothing new in principle; his additions are chiefly to the evidence for his own view of the visual, auditory and tactile centres. The visual centre, which he takes as typical of sensory localisation in general, receives a very elaborate and careful handling. Each hemisphere is shown to be in relation with both eyes. "No doubt can therefore be entertained as to the binocular relations of each cerebral hemisphere in the owl" (p. 71). This too is consistent with total decussation of the optic tracts. Further, "the visual area is not a merely functionally differentiated region capable of replacing, or of being replaced by, other cortical regions, inasmuch as destruction of the visual centres leads to atrophy in the primary optic centres, optic tracts and optic nerves; and, conversely, destruction of the optic radiations leads to atrophy strictly confined to the regions included within the visual zone" (p. 72). This exclusive localisation of vision supports the hypothesis of special sensory localisation "in definite cortical regions".

For practical purposes Localisation, as Prof. Ferrier understands it, serves well, and every week brings facts to its verification; but, theoretically, there is something unsatisfactory in his sharp separation of sensory and motor. None of the ordinary methods of experiment quite warrants his very precise and dogmatic separation. Dr. Hughlings Jackson, to whose hypothesis of cortical representation Prof. Ferrier inclines, is always careful to note the compound, sensori-motor nature of the various levels; and, with the known complexity of the cortical laminations, this is a desirable caution. It may be that sensory centres are anatomically distinct from motor in the sense of occupying different convolutions; it may be that motor can be stimulated independently of sensory. Nevertheless, sensory and motor may fail to express a not less important fact, *viz.*, the relation between the assumed sensory and assumed motor. Prof. Ferrier's experiments undoubtedly demonstrate that the infinitely delicate and numerous channels for the passing of nerve-impulses in the brain do follow certain definite systems, do hold certain relations to peripheral organs, and are capable of control or stimulation at certain points on the cortical surface. But if anywhere, as is also assumed, the sensory systems are the regulating paths of stimuli to the motor systems, the all-important fact is not the sensory terminus or the motor terminus, but the sensori-motor connecting paths. It is allowed that motor cortical centres may discharge in response to stimuli from sensory centres, stimuli of sense-impression or revival of sense-impressions in the memory-centre: where, then, does

sensory end and motor begin? In such a case the organ in action, however its parts may be anatomically distinct, is really a compound organ—as much and as little sensory as motor.

The inadequacy of the bare division into sensory and motor is strikingly obvious in Prof. Ferrier's treatment of the "muscular sense"—a term now struggling for its existence. To take a marked case: when, in the absence of the "sense of movement," the eye guides, directs and controls the movements, how is the "control" actuated? Must we not assume some cortical connexion between visual and motor centres? In that case, the nervous organ is still sensori-motor, and it is arbitrary to limit consciousness to the mere sensory. If, on the other hand, we assume no intra-central connexion, we must regard the movements guided by the eye as the action of two centres in pre-established harmony. Here, as in many other cases, the division into mere sensory and mere motor breaks down. A more developed expression of the fact that I am trying to indicate was given by the Editor of MIND (in reference to Münsterberg's doctrine of Muscular Sense, in No. 60, p. 527) in the following words:—"But just as there never has been any hesitation in connecting some mode of presentative consciousness, under name of 'sensation,' with cortical excitation determined from the periphery, . . . so, when from within (*i.e.*, apart from direct 'sensory' stimulus) a process is started which results in muscular innervation at the periphery, it seems analogically justifiable to posit an element of presentative consciousness in the case—over and above anything in the way of representation not denied to be necessarily implicated".

Here the psychological view materially helps the physical. The same sort of inference is suggested from the physical side in the mere possibility of initiating by electrical stimulus any *acquired* movement. But, in a short notice like the present, I must forbear attempting to discuss the innumerable topics of psychological interest suggested by Prof. Ferrier's weighty lectures.

W. LESLIE MACKENZIE.

Pure Logic and other Minor Works. By W. STANLEY JEVONS, M.A. (Lond.) LL.D. (Edin.), F.R.S. Edited by ROBERT ADAMSON, M.A., LL.D., Professor of Logic at Owens College, Manchester and HARRIETT A. JEVONS, with a Preface by Prof. ADAMSON. London: Macmillan & Co., 1890. Pp. xxiii., 299.

The republication of Jevons's minor works on Logic will be welcome to the student: they occupy about two thirds of this volume. The remaining hundred pages contain the criticisms of Mill's Logic and Ethics that appeared in the *Contemporary Review* in 1877-8-9; and it is with these that the Editor's

Preface is chiefly concerned. The four papers published in the *Contemporary* were, the Preface tells us, but a trifling instalment of a great projected work on Mill's incoherences in all departments of philosophy. The labour bestowed upon this undertaking occupied a large part of the last ten or twelve years of his life, and resulted in the compilation of a "large mass of MS. material," little or nothing of which is in a fit state for publication. It is impossible not to regret for our own sakes that such an ingenious mind should have been so unprofitably employed all those years. But for Jevons it was certainly a labour of love, in prosecuting which he passed a happy time; his zeal and enthusiasm in the service being incessantly fed and inflamed anew by fresh imagined discoveries of contradiction and of well-meant ineptitude in the works of an author who was in fact our greatest public teacher since Bentham.

Prof. Adamson endeavours to explain Jevons's opposition to Mill as arising from a fundamental difference of opinion as to the character and scope of proof and certain knowledge. According to Jevons, proof and certainty were attainable only within the pure Logic of Quality, whereas he understood Mill to ascribe certainty to the results of inductive and material proof. Whatever the merits of this explanation of Jevons's mental attitude, it is but a poor defence of it, since it amounts to saying that Jevons began with a complete misconception of his opponent's position. But, considered merely as an explanation, it has the shortcoming of not agreeing with Jevons's own statement in his first *Contemporary* article, that he had at length been roused to action by a sense of the great public injury done to "the cause of philosophy and good intellectual training in England" by the general study of Mill's sophistical, false and illogical writings. This implies something more than a difference of opinion upon the value of Formal Logic.

Indeed Prof. Adamson's account of the great mass of MS. material for the complete criticism of Mill suggests a very different ground of dissent. Jevons's purpose was, he tells us to begin with Mill's *Essay on Religion*, and then to take up successively his views on Free Will and Necessity, Utilitarian Ethics, Inseparable Association and Logical Theory; and this order goes to confirm in my mind a belief long entertained upon evidence difficult to put into definite statements, that a distaste for Mill's attitude toward religion was at the bottom of Jevons's whole polemic. At the time these articles appeared in the *Contemporary* indeed, we cannot help remembering that other explanations of the matter—of a personal kind—were freely mooted. But such unlovely explanations are incompatible with the manner and style of these writings. The sincerity of Jevons's belief in the penetrating and destructive character of his own criticisms and his innocent delight in the play of his own vivacity, make it incredible that he worked under the stress of

any dark motive. Besides, meanly as he may think of Mill's intellect, he never doubts his integrity of character, but is always emphatic in attributing to him the utmost sincerity, candour and high-feeling. In this he is worth imitating. 'Alas, poor Mill,' he seems to say, 'such a good man and such a bad philosopher!' No: it is enough to say that he regarded himself partly as a scientific investigator who, in detecting Mill's "essential illogicality," had made a discovery hitherto hidden from the whole world; and partly as a chivalrous philanthropist rescuing mankind from oppression, a sort of Mr. Great-Heart heading the procession of our youths and virgins at the universities and marching to the demolition of Giant Despair and Doubting Castle.

In default of any considerable materials in publishable shape to be found amongst the posthumous MSS., Prof. Adamson gives us an outline of what he believes to have been the author's principal arguments and results. In these generalities there is not the slightest originality. If the work was to have had any value it must have lain in the details of execution; and if these may be judged of by the samples before us in the four published articles, it would be dishonest to express regret at the world's being the poorer by one big book unwritten.

When the four articles originally appeared, several replies were published in this Review. In No. 9 (Jan., 1878) the Editor offered some comments upon the treatment of Mill's doctrine of Geometry (*Contemporary*, Dec., 1877), at the same time deprecating the tone of that article, and pointing out the unsatisfactory nature of such criticism unsupported by any positive doctrine. In No. 10 (April, 1878) there were three notes upon the same subject. Mr. Arthur Strachey drew attention to a complete misconception on Jevons's part as to the course of Mill's argument upon the way in which imagination may supplement sense-perception in extending our experiential knowledge of space-relations. Jevons had mistaken for Mill's own opinion a passage in which he was really stating the case of a supposed objector.[1] Then came a reply by Jevons to the Editor's note in the Jan. No., followed by the Editor's rejoinder. In No. 11 Prof. Adamson took up Jevons's third paper on the Experimental Methods which had appeared in the *Contemporary* for April 1878, and completely exposed the critic's misunderstanding of Mill's doctrine as to the relation of those Methods to the Law of Causation. To this exposure I am not aware that any reply was ever offered.

[1] Oddly enough Mr. Strachey himself, in correcting Jevons, makes a precisely similar error. He says of Mill: "His theory being that we see a property of straight lines to be true by merely fancying ourselves to be looking at them, &c." But this Mill gives as an opponent's view. (*Logic*: bk. ii., c. 5, § 5, first parag.).

Meanwhile in the *Contemporary* for Jan., 1878, Jevons had published an article on Mill's doctrine of Resemblance, which seems never to have been noticed in MIND. The attack may be summarised as follows: —(1) In discussing the Import of Propositions (*Logic*, bk. i., c. 5), Mill mentions Resemblance as the last of the relations which a proposition may predicate. (2) In bk. iii., c. 24, he says that Resemblance (except as equality) is seldom the subject of science, and that Locke's doctrine of knowledge as only the perception of the agreement or disagreement of two ideas, and of reasoning, as nothing but the comparison of two ideas through the medium of a third, requires to be limited to the case of Resemblances. (3) In bk. iii., c. 8, however, it appeared that the Experimental Methods are wholly concerned with Resemblance, as their very names imply. (4) And in bk. ii., c. 3, it was shown that the universal type of the reasoning process was resolvable into the inference that certain individuals have a given attribute because other similar ones have that attribute: a doctrine repeated in discussing Analogy (bk. iii., c. 20). Finally, he says that the names of attributes are in their ultimate analyses names for the resemblances of our sensations (or other feelings) (bk. ii., c. 2, § 3 note), and yet holds that most propositions affirming the possession of attributes do not properly speaking assert Resemblance. What a delicious catena of contradictions! That ever their author should pose as a philosopher!

> Who but must weep if such a man there be?
> Who would not laugh if J. S. M. were he?

That in the passages above referred to Mill's language is always sufficiently explicit or sufficiently guarded, I do not maintain; nor even that the hidden source of the alleged confusion, namely the obscure delimitation of Logic and Psychology, is quite outside of his responsibility; but I venture to think that few intelligent students were perplexed by the above difficulties, and that Jevons's confusion is due to the characteristics of his own mind. He has, in fact, confused three things: (1) Resemblance as the ground of cognition, as in the doctrine that the names of attributes are names for the resemblances of our sensations; (2) Resemblance as the ground of inference, as in the explanation of induction, deduction and analogical reasoning; (3) Resemblance as the relation predicated in a proposition, that is, as a result of cognition or inference, or the 'subject of science'. The first of these belongs to Psychology only; the second belongs to Psychology if we are discussing the process of reasoning, to Logic (or Metaphysics) if we are discussing the grounds of proof; the third belongs strictly to Logic. Mill might have made these distinctions clearer; but they were implied in his exposition. We may all be said to have learnt them from him; and not to have perceived them argues on Jevons's part an unfortunate defect of intellectual sympathy.

It seems impossible to doubt that he had made a sincere attempt to understand his author. That he failed to do so may, perhaps, be attributed to his never having learnt to read—I mean, of course, to read like a critic and to interpret. This accomplishment was fortunately not much needed for the kind of work in which he was most successful—his investigations in Political Economy. But without it he should not have attempted this difficult piece of criticism, to disentangle Mill's "intricate sophistry," and to champion the human understanding against the "incubus" of his bad philosophy. How pathetically he complains of having had to study Mill for twenty years, and to lecture on him for fourteen years; how for ten years he had not found him out, and so on (p. 202): but part of the pathos lies in the fate of his pupils! To test his power of appreciating other men's ideas, turn to the end of the essay on Mill's *Utilitarianism*, where he declares his preference for Mr. Spencer's doctrines, and proceeds to tell us how he understands them.

This feeble power of interpretation becomes intelligible if we suppose that he had never been much accustomed to study the writings of the philosophers and metaphysicians, having perhaps no strong taste for such reading. And this again would explain how he seems to have supposed that imperfections of statement like these to be found in Mill were peculiar to him, as if they were not to be met with in an aggravated form in Locke and Kant (to name no others); so that the charge of "illogicality" founded upon such failures loses its terror in the comfort of such good company. It would also explain the conspicuous shortcoming of those criticisms—the absence of any definite philosophical theory to which the exposure of sophistry should have served as a foil. The critic had none; had never comprehensively reflected upon the subject; had perhaps been better employed. He, indeed, professes a general adhesion to the empirical philosophy; but, except his approving references to Mr. Spencer, the only further guide we have to the sort of philosophy he entertained is that Mill's was always the wrong sort.

Every sensible man respects Jevons and wishes well to his fame; and those who were most pained by these articles, by their noise of crowing, and by their queer suggestion that the critic not only thought Mill in error but was glad of it, would have been well pleased to forget all about it. Why were they not suffered to forget?

CARVETH READ.

Principles of Economics. By ALFRED MARSHALL, Professor of Political Economy in the University of Cambridge, &c. Vol. I. London: Macmillan & Co., 1890. Pp. xxviii., 754.

Professor Marshall's comprehensive work, of which the first volume is now published, is likely to be the standard treatise on

Economics for a long time to come. It gathers up and utilises all that has been done by earlier and by contemporary writers in tracing the historical development of society, in amassing industrial statistics, and in defining and elaborating the theory of economics. Departments of investigation which have hitherto been confined to separate works, and even carried on by different and opposed schools of economists, are brought together in this volume, and made harmoniously subservient to the solution of a single problem—the explanation of present industrial forces. This alone marks it out as an important constructive effort. In the department of economic theory it shows a still more striking originality. Several of Professor Marshall's theoretical investigations have already been made known to economists. This volume shows how they point to a generalisation of economic theory which supplements the older doctrines and gives a new aspect to them. The theoretical inquiry is carried out on three parallel lines. In the text we have the precise statement and argument of each point and its illustration from industrial transactions. In the footnotes the graphical method is applied and each theorem represented by the aid of diagrams. The mathematical treatment of economic questions is used more sparingly, and is relegated to an appendix: for the author thinks that it is "doubtful whether any one spends his time well in reading lengthy translations of economic doctrines into mathematics, that have not been made by himself". In this way the argument in the text is complete in itself, and can be followed without reference to its diagrammatic or symbolical expression.

A detailed review of Professor Marshall's work would be out of place in a philosophical journal. It must suffice to have indicated its importance, and to mention one or two of its leading features, especially with reference to the relation into which economic principles are brought with philosophy.

The present treatise is described by the author as "an attempt to present a modern version of old doctrines with the aid of the new work, and with reference to the new problems, of our own age. . . . If the book has any special character of its own, that may perhaps be said to lie in the prominence which it gives to . . . applications of the Principle of Continuity." This is what gives it such a different aspect from the deductive political economy of a generation ago. From the outset this difference is apparent in the author's way of dealing with the definitions of economic terms- a department in which Professor Sidgwick's analysis has left little for any subsequent writer to do. The problem is: among a number of terms which are used in ordinary life and in trade, to give a definite and consistent meaning to each. And the difficulty of the problem arises from this, that the classes of facts denoted by these terms run into one another, and are in a state of constant growth. The recognition of this continuity, however, leads to a solution of the difficulty. But, through not recognising it, the older deductive economists were

apt to give fixed definitions, and then to ascribe the same fixity to the things defined.

Almost the only serious fault which Prof. Marshall would be inclined to admit in these economists—it is especially apparent in Ricardo—is that they tended to ascribe to human nature, and even to industrial methods, a constancy which they do not possess. For the rest, he defends his predecessors with unwearying loyalty, and interprets them generously. Yet the recognition of the continuous change in economic conditions involves a far-reaching difference between his method and theirs. The very subject-matter of the science comes to be looked at differently. Wealth is but a means of satisfying human wants, and, therefore, Economics, if "on the one side a study of wealth," is "on the other, a more important side, a part of the study of man". Further, as the author points out, no clear line of separation can be drawn between the "economic" motives which tend to wealth, and the moral motives which may lead elsewhere. Ricardo and his followers work as if it were otherwise: as if, indeed, there were no conflict of motives at all. "The people whom they knew most intimately were City men;" and on 'Change it is usually supposed that all motives can be reduced to one. But something more than this has to be said in explanation of their tendency to treat all men as if they were City men. It is not necessary to limit in any way what Prof. Marshall says as to the Semitic origin of Ricardo's peculiar genius for threading his way "through intricate paths to new and unexpected results". But I suspect that the narrowness of his view of human motive was Benthamite rather than Jewish. He was the Benthamite economist; and he shared the narrowly intellectual and narrowly selfish view of human conduct which was characteristic of Bentham and James Mill and against which J. S. Mill struggled with incomplete success. "For pleasure—the greatest that can be got" was made to describe every motive, and this was easily changed into "for wealth, or the means of pleasure," tempered only by aversion to toil. The Economics of last generation was thus coloured by its Benthamism, just as that of the present day is modified by various influences, but especially by historical study.

The historical school has contributed to a correct understanding of the laws of economic development. And Prof. Marshall follows the historical school in tracing the circumstances which have led to the present organisation of industry, and which are continually modifying industrial activity. But this does not lead him to discard as valueless the work of the deductive economists. The finality which even J. S. Mill ascribed to the Ricardian doctrine of value, of course, disappears. The author holds, however, that, in almost all their positive conclusions, the deductive economists were right; but that their conclusions were stated too broadly, and without bearing in mind the conditions under which they held true, and the limits of their application. In stating and keeping constantly before the

reader their conditions and limitations Prof. Marshall is more careful than any previous writer except Prof. Sidgwick. In this way he is able not only to retain all that was of value in previous economic theory, but to extend its bounds; and, by studying the effects of each force both in isolation and in different combinations, to reach new and generalised theorems, which are not limited in their application to the circumstances of fifty years ago. Of chief importance in this reference are the varied applications of the conception of Marginal Utility—what Jevons called Final Utility—and the connected extension and generalisation of the doctrine of Rent.

The whole theory rests on the presupposition that we can find some means of measuring economic goods and a man's desire for them. Now, just as, in the physical world, energy is measured by work done, so here a man's desire for any economic good can be measured by what he would give for it. And it would therefore seem unnecessary to take increments of pleasure as the unit of measurement, and thus to make Economics depend on a doubtful psychological theory.[1]

Among the most instructive and interesting portions of Prof. Marshall's work are the passages in which he examines the relative advantages—the effects upon human well-being—of various industrial orders and conditions. The optimism of Adam Smith, which made him believe that industrial self-seeking was over-ruled "by an invisible hand" to promote the common happiness, was not unnatural at a time when free competition meant freedom from artificial restrictions and privileges. In many of his successors the doctrine persisted rather as an *a priori* dogma of the schools than as a position verified by experience. At the present time the pendulum of opinion has swung to the opposite extreme, and there is a tendency to charge free competition with all industrial evils—although the latest developments of industry are towards a state in which competition destroys itself and becomes merged in gigantic monopolies.[2] Prof. Marshall's discussion of these topics must be read in his book itself: they could not be given or commented on here without going into his special economic doctrines and mode of treatment with some fulness. It need hardly be said that they show the thoroughness and care in collecting material, and the judgment in estimating evidence, which are characteristic of the author's whole treatment of the facts of industry.

W. R. Sorley.

[1] On this point reference may be made to Mr. J. S. Mackenzie's recent *Introduction to Social Philosophy*.

[2] With regard to this tendency of competition to "smother itself in its own smoke," Prof. Marshall thinks that "it is the better opinion that popular rumour, going now as ever to extremes, has exaggerated some features of the movement towards combination and monopoly, even in America". See Presidential Address to the Economic Section of the British Association at Leeds, 1890, on "Some Aspects of Competition".

An Introduction to Social Philosophy. By JOHN S. MACKENZIE, M.A., Glasg., B.A., Cantab. Scholar [now Fellow] of Trinity College, Cambridge, and Assistant Lecturer on Philosophy in Owens College, Manchester. Glasgow: James Maclehose and Sons. Pp. xii., 390.

The reproach is often made, and with justice, against those whom it is the fashion to call writers of the neo-Kantian school, that they are so fond of insisting on first principles that they never reach the details at all. Mr. Mackenzie's philosophical principles may cause an initial difficulty to some readers, but at least he is free from this reproach; and I hasten to add that metaphysical differences need be no bar to the profitable study of the greater part of his work. He attempts to apply what he considers true philosophical principles to the study of social questions, and to me he seems to be happiest where he abandons abstract discussion and attacks the more practical problems themselves. He exhibits abundant and accurate learning in treating them, and the constant references to the literature of the subject especially in Economics, will be found useful by the student. His learning throughout the book is indeed remarkable and there are few writers on any of the many questions raised to whom he does not do justice. At the same time the reader will feel a certain indeterminateness in Mr. Mackenzie's utterances on practical questions, which is hardly to be wondered at with the view he takes of the functions of philosophy, as holding before the mind the mere ideal of a system, which can never be completed in fact, and would cease to be philosophical if it could. He even apologises in one place (p. 367) for "seeming to touch too closely on special measures and institutions". I, for my part, am glad that he has not been content with mere reiteration of the principle that we must see life as a whole, and that he has given some body to his ideas. The book is as a whole very well written, and for this reason I expostulate with him on his abuse of poetic quotation. I have counted those quotations which are distinguished by type and verse, and find on an average one to every eleven pages; besides innumerable fragments in the text. Mr. Mackenzie can put his ideas so well himself that he ought to have avoided this temptation of the accomplished man.

It is an ungrateful task to have to begin by finding fault; but the first of Mr. Mackenzie's chapters, in which he explains the scope of Social Philosophy, appears to me the least satisfactory part of the book; partly because it raises ultimate issues which it is impossible to deal with in a short space, and partly because it is not in itself perfectly clear. Social Philosophy, he holds, is concerned with that debatable land which the economist and the moralist in deference to one another regard as neutral. But it is not to be confused with Sociology and is rather "a systematic effort to deduce the laws of social life from certain primary principles which are ascertained by philosophical

analysis" (p. 12). Starting from Aristotle's classification of causes, he then seeks to show that philosophy arises in two ways —whenever by a consideration of the laws of things we are led on to investigate the "necessary forms which give determination to all thought and things," and secondly, whenever ends or ideals are concerned. The philosophy of society will thus investigate the meaning of social life and consider its meaning as having reference to an ideal. As to the first of these statements, whether an analysis of the meaning of society should be called philosophy or science might seem to be a matter of names. In reality it is not so, but raises the whole question of the principles of 'neo-Kantianism,' with which it is impossible to deal here. As to the second statement, I observe only that ends or ideals are nothing but the formulation of desires, are as much psychological facts as perceptions, and in themselves call for no philosophy; nor does the fact that they are intellectual make any difference. But the two statements taken together point to a confusion which runs through this chapter and affects Mr. Mackenzie's whole conception of his problem. Philosophy is treated now as a science which explains the ultimate nature of things, and now as having a special connexion with practical interests. In the second capacity it ceases to be merely a summary of knowledge; it becomes an aspiration, a practical effort. And in keeping with this, philosophy is described in an eloquent but, as I think, rhapsodical passage (pp. 33-7) as being "not a truth which is grasped, but an inspiring ideal which shines through". That this conception of philosophy produces a certain vagueness in Mr. Mackenzie's work has been already remarked. In fact, he seems to confuse philosophy with legislation or practical effort as directed by the largest possible view of things,—a view which is popularly described as philosophic only because philosophy is that which gives us the ultimate conspectus of all knowledge, and all large-mindedness has therefore the spirit of philosophy. In consequence his Social Philosophy is not a clearly marked science, but a mixture of Ethics and Sociology with certain discussions in practical legislation, which are not really science at all but practical portions of Ethics or Economics and are hence partly included in such economical works as Mill's or Prof. Marshall's. The most valuable parts of this chapter seem to me those on economic science.

However, the discussion of the limits of a science or a philosophy is always apt to be tedious and unprofitable. I could wish chapter i. omitted altogether, if that were possible. Chapter ii. really begins the subject, and is excellent. It is entitled, "The Social Problem," and begins by showing how the present problem originated, in a historical survey of much learning. Mr. Mackenzie rightly speaks of the present time as the period of social organisation in contrast with the preceding age of liberation from authority, and the earlier age of subjection of the individual to

religious and military control. Then follows a survey of modern conditions—conceived probably with a reminiscence of Bacon's procedure in the first book of the *Novum Organum*—in which he first discusses the difficulties which we have to deal with, and especially the familiar industrial disorders which Carlyle has brought home to the consciences of all; and then passes to the "conditions of hope," pointing out with much force how the very circumstances which disintegrate society tend also to consolidate it. Similarly, while he traces the evils of individualism and materialism as "developments of thought that impede us," he points out how they also contain promise of "developments of thought which help us". I give hardly more than the headings of the sections of the chapter, which is very interesting and carefully worked out.

In chapter iii. we return to the more abstract question, with a long and minute examination of the idea of organism which is so habitually applied to society. The organic unity is distinguished from the other forms of unity which may be conceived—forms of unity which are sufficiently described by their titles as the unity of monadism and of monism. The differences produced by these different conceptions of society in various departments are drawn out. Mr. Mackenzie rightly enough remarks that, instructive as is the analogy of the organism to society, its immediate value is that it clears the mind of less suitable analogies, and that it must be examined in itself if it is to be more freely applied. But, finding that society agrees with the organism in respect of the central questions—"(1) Are the parts intrinsically related to the whole? (2) Does society grow from within? (3) Has society a reference to an inner end?"—he next proceeds to the difference produced in society by the presence of self-consciousness. Then follows an elaborate statement of the possible senses of self-consciousness: the two most highly developed forms of which are, first, that in which an organic being becomes conscious of itself *as a unity*, which Mr. Mackenzie thinks, on doubtful evidence, may be present in the animals; and, last, that self-consciousness, which, though only the development of what is found below, yet really makes the difference between man and animals. The self, in this last sense, is the self as a system or a world of experience—as, for instance, the cosmos of experience which Shakespeare created for himself and revealed to others. Such a whole of experience stops short only with the possession of a completed science and philosophy. Hence the need of society, where man finds his aspirations after a completion of experience satisfied. I am obliged to represent all this very shortly, though it is philosophically the most interesting part of the book. I find in it the same want of substantiality in fact, with grandeur in appearance, which exists in Mr. Mackenzie's conception of philosophy itself. And, so far as I understand him, I think his method of working up to his conclusion open to grave doubt. It seems strange to

treat as what is characteristically human that which can exist in consciousness only under exceptional circumstances. Not all men are burdened with this consciousness of a cosmos of experience. And though there is no doubt whatever that, as a fact, human nature and society go together, the organic character of society cannot be said to "flow from the principles of human nature". This appears to be an instance of that inversion of the natural procedure which Fechner described as the method from above downwards. It is surely simpler, and, at any rate, less misleading, to show how the fullest development of self-consciousness comes from that enlargement of an individual's experience by the acknowledgment of similar individuals which arises in society. This is almost a commonplace of the psychologist; and it is necessary to say this because, though Mr. Mackenzie gives to his discussion a metaphysical air, he does not, I suppose, mean anything more than this.

Chapter iv. is a chapter in ethics, dealing with the social aim, and reviewing one by one the various ends which have been proposed by ethical writers. Pleasure has necessarily the largest share of the discussion; hedonism is criticised with the arguments familiar to readers of Green, but with some freshness of treatment. One feels that the true proportions of pleasure in the End are misrepresented in this method, for it really does not matter so much what particular writers have said about pleasure as what part the thing pleasure itself plays. Mr. Mackenzie insists that pleasures are different in kind, and in this general statement I believe him to be right; but I do not feel sure whether in saying that pleasures contain an element of preferability or sense of value he does not imply that this sense of value is inherent in the pleasure. This must be denied. The pleasure of drinking and that of thinking are different in quality only in the same way as white colour is different from red colour. The sense of value of the pleasure is *founded upon* this difference in quality, but is itself the product of growth, and does not belong to the pleasure as such; and the word preferability must be understood as being used only in an anticipatory sense.[1] Mr. Mackenzie describes the social end (as might be expected) as consisting in the satisfaction of wants, and more precisely, rational wants—self-realisation understood in the large sense in which the self is conceived; and this seems to be equivalent to satisfaction of ourselves according to that clearness of view which arises from an understanding of the world and our relations to it. Here we have the purely metaphysical idea of a completed whole of intelligence coming in to modify (and spoil)

[1] Mr. Mackenzie has done me the honour of referring here, among other places, to my work. However, I have been careful to state that I used 'preferability' as above defined, and for want of a better word. Perhaps Mr. Mackenzie means the same thing, but I do not feel clear that he does, and I rather think not.

the ethical conception of social solidarity, which is the interest the author has most at heart.

The last two chapters are, I think, along with chapter ii., the most interesting portion, but they cannot be represented without going too largely into detail. In chapter v. he treats of the Social Ideal, reviewing the ideals which have been at various times proposed. Under the name of the Ideal of Equality, the various forms of Socialism are discussed. The criticisms are sensible, but they probably exaggerate very much the extent to which collectivism would impair the development of individual energies, and therefore indirectly of the whole of society. And Mr. Mackenzie treats scarcely adequately that form of Socialism which is the only one moderate persons regard as worth discussing—that in which there is no absolute equality, but relative equality, that is, where the large services of the gifted man are considered equal to the slight services of the commonplace man, provided each is set to do the work he can do best. Assuming the existence of such a sentiment (and it exists in many religious ideas), the fact that individuals are so differently gifted would cause no difficulty. Doubtless, the real difficulty is to create such a sentiment, and it is the view of this which makes Mr. Mackenzie look with the greatest favour on the ideal of fraternity, which means a readjustment of hearts rather than of external conditions. This is the cause to which such societies as the Ethical Societies of America and London devote themselves, and few will doubt (certainly not I) that it is a noble cause. But a man may seek to develop such a sentiment and yet feel that this alone is insufficient by itself as a solution of all our troubles; that in order to make the education of sentiment effective those moderate changes of social organisation are necessary which will supply a practical field for the exercise of the sentiment.

In chapter vi. we have a discussion of the different points in which Social Progress may be expected. They are considered under the head of the three elements which, according to the author, are involved in human well-being, *viz.*, the subjugation of nature, the organisation of society, and personal development. Under all these heads there are many good remarks, and the chapter is useful as giving a kind of general conspectus of questions in which reform is possible. When Mr. Mackenzie speaks of the nation, he is principally concerned how to bring about the desirable consummation that philosophy should be king; or, as others might prefer to express it, that in our democracy legislation should be inspired by the widest views. He finds the hopefullest outlook in the habit of our great writers of dealing with subjects of social welfare, in the influence of the churches, in the spread of scientific views about social and political questions, in the efforts of voluntary associations instituted for social ends, like the Trades Unions, the Knights of Labour, the Ethical Societies. In this way he thinks democracy may be leavened by wisdom. But he

lays the greatest stress on personal development and on education as a means to it; and the chapter concludes with insisting on the necessity of imparting wisdom as founded, in the last resort on philosophy, that is, a wide view of life. The remarks on the object of education in general and on technical education (with which may be compared Prof. Marshall's treatment of the same topic in his recent volume), on the restrictions which have to be placed upon the action of government in interfering with the individual, the description of the various forms of social organisation from the family up to international organisation are all worth attention. It is hardly possible to do more than indicate the nature of the chapter. The only general criticism which I can pass upon it is, that it would be much simpler if instead of philosophy we were to read everywhere an enlarged idea of our duty to our fellowmen and an enlarged devotion to their service. In conclusion, I can only regret that in having to speak of the more debatable questions of principle contained in the book, I have had less space left to report the more special and detailed portions in which I consider that the chief value of the work lies.

S. ALEXANDER.

L'Évolutionnisme des Idées-forces. Par ALFRED FOUILLÉE. Paris: F. Alcan, 1890. Pp. xciv., 303.

This work contains the substantive account of the author's theory of *Idées-forces*, which was promised in his *L'Avenir de la Métaphysique*, noticed in MIND, No. 59. As indicated by the departure from the original title (*Principes généraux d'une Philosophie des Idées-forces*), the mode of treatment is still, as in the former work, in the main critical rather than purely constructive, and, in particular, assumes the form of a revised interpretation of the doctrine of Evolution. After expounding, in a masterly Introduction, the general principles of an evolutionism of *idées-forces*, and showing the importance of the conception for psychology, for metaphysics, and for ethics respectively, M. Fouillée proceeds, in the body of the work, to discuss these "principles" more minutely, first in their psychological, and then in their metaphysical significance. The discussion is divided into four books, the first of which, dealing with the "general characteristics and value of states of consciousness," investigates the psychological basis of the theory, while the other three contain its critical vindication. Though the more minute and largely psychological nature of the investigation does not afford the same scope for the author's gift of telling, antithetic style, the present work is marked throughout by the same clearness and pointedness of statement as characterised M. Fouillée's previous writings. It has the additional and peculiar interest attaching to the exposition and defence of its author's central philosophical conception, suggested and critically em-

ployed in his earlier books, and to be further developed in detail in a treatise already announced as in the press, *La Psychologie des Idées-forces*, which again is to be followed by *La Morale des Idées-forces*. Whatever we may think of the doctrine elaborated in these works, we cannot but marvel at the almost Spencerian comprehensiveness of M. Fouillée's philosophical activity.

The conception of Evolution against which M. Fouillée's protest is throughout directed, and for which he would substitute the "evolutionism of *idées-forces*," is the mechanical or Spencerian. The two 'great gulfs' which he finds 'fixed' in the evolutionary theory as taught by Spencer—that between the inorganic and the organic, and that between the organic and the conscious, are both due, he holds, to the "entire elimination of factors of a mental order from the number of primitive and active factors of evolution". The logical consequence of such a theory, according to M. Fouillée, is the reduction of mental life to the mere passive reflexion of the physical mechanism, the inclusion of man, with all his so-called 'powers,' in the Cartesian "automatism"; a consequence that is accepted by "a whole school of contemporary psychologists, Huxley, Bain, and Maudsley," who, led by Spencer, proclaim that "the facts of consciousness are 'subjective and accessory aspects' of the living automaton". The thesis of M. Fouillée's work is the vindication, as against this "school," of the energy, efficient causality, or *force* of "ideas" (*idées*); or more precisely, the tracing of *all* efficiency to "ideas" as its ultimate source. Further, in this efficiency of the mental or ideal, is found the clue to universal evolution; "ideas," being the efficient "forces" of the universe, are the guiding factors in its evolution. "The capital question to which we shall relate all others, is, to know whether ideas . . . can become real *factors* in the mental evolution, internal forces capable of reacting upon that evolution, and, by its mediation, upon the universal evolution." Finally, while the evolutionism of Spencer is transcendent and virtually dualistic, that of the *Idées-forces* is a Monism immanent and experimental. The activity of the "idea" finds its play within the physical mechanism. "Real nature knows not our abstractions." "Ideas" are links in the endless chain of causation, which is *at once* physical and psychical. The "principle of immanent and experimental Monism," accordingly, is the following: "All the facts of the universe, without exception, must be embraced in the bonds of action and reaction, and form a single dynamical whole". Within this whole, however, there must be, not merely a "harmony," but a gradation or "hierarchy" of forces; and the fundamental or primary "force" is not the physical but the psychical, not motion but volition. Instead of mental states 'reflecting' material, the latter are the expression or manifestation of the former. Hence the title of the theory maintained by M. Fouillée, *Idées-forces*, in opposition to *Idées-reflets* or *Idées-ombres*, which would characterise the counter-

theory, implying that ideas are not real factors of the causal process, but only "symbols or aspects" of reality.[1]

Evolution, in the mechanical sense, M. Fouillée maintains, is so far from being a philosophical explanation of the universe, that it presents a new problem for philosophy to solve, the problem, namely, of the *origin* of that movement whose transformations it describes. This is found, he insists, not in external action or impulse, but in the reaction of the being or thing acted upon; the source of all movement, and so of all evolution, is to be found in the inner nature of things, not in their outer relations; or, in the usual language of philosophy, in the subject rather than in the object. The reaction of the 'subject' may be called "appetite," or, more generally, the "appetitive process"; as Aristotle said, 'all movement is a sort of appetite'. "Appetition is to be traced under every motion of living beings, and the most mechanical movement of their cellules implies an infinitesimal appetite; . . . it is not only the movements of animate beings, reflex or other, that imply, as their internal source, at least an infinitesimal rudiment of feeling: but all movements, even in the inorganic sphere, are probably obedient to the same law." For, since all movement follows the line of least resistance, and in the interpretation of this fact we can only reason after the analogy of what occurs in ourselves, we must conceive "the secret force which produces movement as an activity tending to expend itself with the least possible effort. This activity is just the appetitive process or the primordial will, that is to say, desire, which, while accompanied by feeling more or less dull, is itself unreasoned and unintelligent. . . . Thus, in opposition to the *savants* who, following a tendency entirely materialistic, seek to trace the mental order to an automatic mechanism and a complexus of reflex actions, we see how, passing from psychology to cosmology, it is necessary to establish an element of the mental order amongst the principles of the universal order and of the universal mechanism. . . . As this production or circulation of movement in the universe is unintelligible without a universal activity, so this activity itself is unintelligible for us without a universal sensibility." As Leibniz said, 'there is nothing dead in nature'. "Everything is produced by way of mechanism, but, at the same time, everything is produced, if one may say so, by way of sensation and appetition."

Thus the "immanent and experimental monism" which M. Fouillée offers us, consists in a resolution of the physical into its psychical elements, of movement into appetite. The mental,

[1] *Idée*, it should be noted, is used by M. Fouillée in the wide Cartesian sense. It includes "all states of consciousness in so far as they are susceptible of being reflected upon, and thereby of reacting upon themselves, upon other states of consciousness, and finally, thanks to the union of the physical and mental, upon the organs of movement".

far from being the product of evolution, is found to be its initial factor. "Thought" or "consciousness" is present, though it may be in a very vague and indistinct form, in the earliest as in the latest stages of evolution; and it is through its constant presence and operation that the evolution takes place. "That is why, giving the name of *ideas* to all states of consciousness which exist more or less for the subject, and are more or less representative of objects, we shall have the right to speak of *idea-forces* if we succeed in disengaging the internal source, at once appetitive and representative, of that mechanism of which science describes the external effects."

The "appetitive process," just described as constituting the inner nature of things, and so containing the ultimate explanation of their evolution, is variously defined by M. Fouillée as "an impulse accompanied by vague pleasure or pain," "a need seeking for its satisfaction," the "reaction of the conscious subject," "the response of the within to the without," "a state of consciousness, if not an act of intelligence". The "consciousness" implied in appetite, it must be observed, is not reflective consciousness of the end pursued, but merely direct and, it may be, indistinct consciousness of the acts themselves through which the end is attained. For while "the term *intelligence* . . . indicates prevision, adaptation to a preconceived end," and is applicable only to the later or more evolved stages of consciousness, "feeling" or "appetite" is necessary to all existence and activity, and feeling always implies consciousness of feeling.

In the germinal or appetitive consciousness we can distinguish the three elements present in all its later forms—*viz.*: (1) an element of sensation or receptivity, the occurrence of a change; (2) an element of feeling or emotion, a pain or pleasure more or less vague; (3) an element of activity or will, the reaction of the being, resulting in a new change. Thus it is not in Knowledge, which, "seizing only relations, remains always more or less superficial," but in Appetite, which is the germ including it, that we must seek the secret of the universe and of all its changing life. "The most obscure and rudimentary state which we can represent to ourselves is an indistinct activity implying a vague discomfort and a vague well-being, and in which the intellectual side is not yet disengaged from the emotional." This original activity or effort may be called indifferently the "primitive appetite" or the "primitive will". Not that it implies choice. Present voluntary actions are the result of "voluntary actions in the simple and impulsive state"; actions which follow upon a conflict of motives are the later result of acts of the original spontaneous will.

Such a theory, it is insisted, preserves the continuity of the universe, that is, interprets its character *as* a universe, as no other theory does. It allows no break between the highest and the lowest terms of existence, between the intellect of a Shakspeare

and the inert mass of 'stocks and stones'. For, in truth, nothing *is* dead or inert; everything is instinct with life and movement. As in the universe of Leibniz, all things are conscious or 'perceptive', though all are not self-conscious or 'apperceptive'. The difference is not between the conscious and the unconscious, but in the *degree* and *intensity* of consciousness. There is, strictly, no "unconscious," only the conscious and the "sub-conscious"; or the clear and reflective, and the obscure and unreflective consciousness. From the "purely sensitive consciousness," consisting in "general and continuous sensibility" (*coenesthésie*), we rise gradually to the "intellectual consciousness," as the specific appetites or desires differentiate themselves from the "mass of general appetite". Even the passage from consciousness to self-consciousness is a gradual one. Everything is, in a sense, a 'self,' and, as such, reacts upon the universe of 'selves'; only its consciousness of itself is more or less vague. In this regard, the theory which derives the conscious from the unconscious is convicted of two confusions; (1) of indistinct and obscure consciousness with unconsciousness, and (2) of consciousness in general with self-consciousness. "Self-consciousness is only the highest and most centralised form of the reflective consciousness, which is itself already distinct from the spontaneous and general consciousness. . . . This sort of polarity of consciousness can only produce itself in the bosom of a more general consciousness, not yet differentiated into subject and object, a consciousness, however, whose generality is not on that account to be identified with unconsciousness."

The above is a mere outline of the able and persuasive argument by which M. Fouillée seeks to establish his central philosophical position. The main argument is supported by a number of valuable criticisms of opposing theories. The author is particularly strong in psychological analysis, and the amount of valuable psychology in the present work is very considerable; for example, the analysis (referred to above) of the "appetitive process" into its three constituent elements, and the account of Instinct and of Habit. Nor could anything well be more telling than the criticisms of the various forms of the theory which derives consciousness from the unconscious (in the Introduction and bk. i.), of the "automatic" theory of consciousness (in bk. iii.), and of the "two aspects" theory (in bk. iv.). If space permitted, it would repay us to follow the author into these often minute discussions; all that can here be done is to commend them to the careful attention of students of psychology and metaphysics, and pass on to a general estimate of M. Fouillée's main position.

Perhaps the chief value of the book is the criticism it contains of the mechanical conception of Evolution, implicit in the Darwinian theory of 'Natural Selection,' and rendered so popular in these days by Mr. Spencer. And, though directed specifically against mechanical and "automatic" theories of evolution, this

criticism is valid against materialistic theories of every complexion, and is a spirited and often brilliant defence of an idealistic view of the universe. Further, in his own theory of *Idées-forces*, as sketched above, M. Fouillée offers a contribution, at once courageous and skilful, towards a reconstruction of Idealism. For an idealistic, like a mechanical philosophy, is apt to rest content with a universe of mere relations, accounting for the *how*, but neglecting the *what;* giving us, it may be, a universe in general, but not the universe of living reality. Now, M. Fouillée attempts, by at once maintaining the primariness of the psychical (the *idée*), and conceiving it dynamically (as a *force*), to resolve the generality of the ideal universe into a cosmos of individual psychical centres (appetitive or volitional). The author makes the additional and important claim for his theory, that it reaches the true unity of things, which, as already maintained in his *L'Avenir de la Métaphysique*, is not transcendent and unknowable, but immanent and experimental, *fondée sur l'expérience*. Activity, which is essentially internal and psychical, not external and physical, is, it is insisted, the heart of the actual universe. There are not two spheres, or even "aspects" of Reality, but only one, and that the spiritual; there are not two evolutions, but only one, the evolution of Mind or Spirit; there are not two forces, but only one, the *idée-force*. "Consciousness, far from being without reality, is the immediate presence of reality to itself, and the internal unfolding of its riches." In consequence of "the profound identity of will and movement, . . . in seizing volition, we seize the *reality* of motion itself, its actuation". For we must interpret the universe by its highest term—thought, not by its lowest—matter; "a philosophical theory must include the totality of experience, not merely fragmentary parts or aspects of it". This fragmentary character inevitably attaches, according to M. Fouillée, to the external or physical; the internal and psychical alone is fitted, in virtue of its complete and all-inclusive character, to stand as the constitutive or real unity of things.

The theory calls for a word of criticism. It is to be feared that, in the eagerness of his reconciling project, M. Fouillée has been led to sacrifice, or, at least, not sufficiently to safeguard, some of the essential elements of a true Idealism. Notwithstanding the firmness of his insistence upon the primary and fundamental character of the ideal or psychical, upon its completeness as including in itself all the characteristics of reality, and upon its supreme importance as the moving cause in all evolution, there is a certain tendency to co-ordinate motion and consciousness as equally primordial and independent factors. Such a tendency appears, not only in statements of the evolutionary process, where it might result from accommodation, conscious or unconscious, to the language of popular thought, but in the very choice of the name *Idée-force*, in which the author may be supposed to sum up his theory. This name, while it expresses aptly enough the

central purpose of the book—the reconciliation of an idealistic with a mechanical interpretation of the universe and its evolution, itself suggests, if it does not imply, a certain mechanical, and therefore inadequate, conception of mind. Mental activity may include and explain mechanical movement, but the former is not to be formulated in terms of the latter. In other words, while all forces are ideas or objects of consciousness, ideas cannot, except metaphorically, be described as forces in the mechanical sense. That superiority of rank which is so ungrudgingly conceded to the mental by M. Fouillée, renders much of his phraseology inappropriate, and, to a certain extent invalidates his proposed conciliation of Idealism and Mechanism, at least in the form stated. Such a conciliation is impossible so long as thought is regarded merely as one, as motion is another, "factor" of evolution; it becomes possible only when the idealistic or teleological interpretation is resolutely held to, as not excluding but including the mechanical.

Once more, it is not to "ideas," after all, but to the "mind" (*l'esprit*), that efficiency or "force" belongs. This is admitted by M. Fouillée in his criticism of Herbart and the Associationists. The question remains, therefore: What *is* the "Mind"? M. Fouillée's only answer is that it is "Will" or "Appetite"; and this again turns out, on analysis, to be but the general mass of rudimentary feeling, the *Streben* which man shares not merely with the "brutes," but with "minerals". Deliberate choice being dismissed as "unessential," all that remains as the essential germ of Will, and so of man's spiritual being, is the mere blind impulse to *be*. How, from such a start, the goal of moral Will is to be reached, I do not see. It is possible that such a difficulty is the result of a misunderstanding of the theory in question. The metaphysical and the psychological are so intertwined in M. Fouillée's argument that it is often difficult to disentangle them. As a psychological account or 'natural history' of Will, I am not prepared to question the validity of the theory. But if it is offered as a metaphysic, such an account seems to me to contain difficulties of the same kind as those which M. Fouillée has so acutely exposed in mechanical evolutionism. A stronger insistence upon the teleological element in Idealism might have saved the theory from this as well as from the former defect.

JAMES SETH.

Die Entwickelung des Causalproblems von Cartesius bis Kant. Studien zur Orientirung über die Aufgaben der Metaphysik und Erkenntnisslehre. Von Dr. Edmund Koenig. Leipzig: O. Wigand, 1888. Pp. vi., 340.

Die Entwickelung des Causalproblems in der Philosophie seit Kant. Studien zur Orientirung, &c. (Zweiter Theil.) Von Dr. Edmund Koenig. Leipzig: O. Wigand, 1890. Pp. xii., 488.

These substantial volumes form a piece of work that was well worth doing, and is very well done. In the shape of studies of particular thinkers, they include both a history, in effect continuous, of modern theories of Cause, and an independent discussion of the scientific validity of the conception and its philosophical basis. The author, it may be noted at the outset, proclaims himself a Kantian; and being, as nearly as possible, a pure Kantian, he finds much to agree with in English experiential philosophy both before and after Kant. It is on the experiential side of Kant that he especially dwells, one of his principal results being the rejection—in reference to the conception of Cause—of philosophic rationalism. Not merely the particular phenomena that are thought of as causally connected, but the causal relation itself, is given in experience. A mental "activity" is required to turn the "given" order into a necessary connexion; but the criteria by which we know that the relation is one of cause and effect are wholly experiential. The rationalistic view of the causal sequence, the notion of the effect as *deducible* from its cause apart from previous experience, though not yet wholly banished from scientific thought so far as it is uninformed by philosophy, can no longer have any place in the philosophical theory of science.

The rationalistic notion of Cause, as the author begins by showing, was the predominant one at the opening of modern philosophy. By Descartes it was expressly formulated, and over English philosophy down to Locke it retained a powerful influence. Cause was defined as that from which the effect follows with necessity; the conception of the effect being necessarily involved in the conception of the cause. The starting-point was here given by certain scholastic definitions; but the notion of Cause took its distinctively modern character first from its combination with the monistic doctrine of the unity of composition of all things, and then from its expression in terms of the "mechanical philosophy". That it could be made use of for the actual explanation of nature was owing to the genial employment, by the founders of modern physics, of the method of analysis. Galileo's foundation of dynamics, for example, was the result of the application of analytical thought to experiences of motion. Such elements in the phenomenon were distinguished as could be experimented upon in sufficient isolation. Whatever discoveries might be made

by experiment thus directed, it was nevertheless a long time before science attained the conception of an observed uniformity as constituting a natural "law". For Galileo, as for Descartes, no proposition was entitled to rank as a "law" unless it could be deduced rationally from some immediately evident axiom. The art, it is true, was in analysing complex relations into simple relations that could be established or disproved by experiment; but to the completed process the form of a deduction had to be given. So long as the relations were those involved in the communication of motion by contact, they appeared so obvious that little question was raised as to pure deduction's being the ideal method. The "mechanical philosophy" could look forward to a complete demonstration of all natural processes from the definition of matter as having figure and impenetrability, together with like simple definitions of motion and so forth. Newton's employment of the principle of "action at a distance" was regarded by the "mechanists" as a falling off from this view; such action not being deducible from their definition of matter: and even Newton did not venture at once to reject the conception of a physical axiom as an immediately evident principle, and of a scientific "law" as to be deduced from axioms. Gravitation was asserted as something really occurring, though not in itself immediately intelligible, that might in the future receive deductive explanation. The Newtonian principle, in the meantime, was found to furnish a thoroughgoing scientific interpretation of the planetary motions such as the rigorous "mechanical" doctrine could not give, and so tended to bring into vogue an experiential philosophy for which ultimate natural laws were neither deducible from mere general axioms nor immediately evident. Then, as scientific research made its way more and more into details, there went on an accumulation of observed uniformities that could not be deduced from any recognised principles. Such uniformities also came to be called "laws," and the conception of a scientific law as a uniformity, whether deducible or not, at length became the prevalent one.

Partly promoting and partly promoted by the scientific movement towards experientialism, there was a properly philosophical movement. The Occasionalist school, anticipating later "Positivism," denied that there is any rationally deducible or immediately evident connexion among natural events; nature, so far as accessible to science, being regarded as "phenomenal," or as consisting of appearances without real "intelligible" relations to one another. To natural science is refused the rational character that Descartes strove to impress upon it. The only recognised "cause," in the older sense, is the will of God. All relations discovered by science are, therefore, arbitrary connexions. It is not to be judged apart from experience what connexions exist or do not exist in nature. There is a fixed order in things, but no real efficiency. The efficient cause is

"metaphysical". A rationalistic metaphysic is thus combined with an empirical and phenomenist view of natural law. Independently, the English experiential movement made way. From the ground of Locke's psychological criticism of knowledge, Berkeley proceeded to a completely phenomenist view of nature, and Hume to a phenomenism (in combination with scepticism) extended universally. The conception of the causal relation as a necessary connexion, involving an intelligible "power" of the cause to produce its effect, became untenable as far as the phenomenist view extended. With Berkeley it disappeared for corporeal things, but not for "spirits"; with Hume it disappeared altogether. Scientifically, no causal connexions—not even the most "obvious" mechanical ones—could now be asserted prior to experience. Influenced or not by this movement, the scientific rationalism of Descartes, while it was carried forward, was also made less rigorous. In Spinoza, indeed, it reached its consummation; but Leibniz, by his principle of "sufficient reason," prepared the way for an experiential view of natural law, combined with an *a priori* theory of knowledge. Kant, as the author maintains, brought the double development to a conclusion which is, in essentials, definitive. Later thought, while it has not failed to be penetrated to some extent by the Kantian criticism, and has made great advances in detail, has yet recurred, more or less, on one side to rationalistic doctrines of the pre-Kantian type and on the other side to pure experientialism. A return to the Kantian criticism is still necessary, in order to correct the results of thinkers like Comte or Mill on the one side, and Herbart or Lotze on the other.

This is a general outline of what the author aims at showing historically. Let us now try to follow him in more detail, bringing out his most interesting points in relation to particular topics.

First, it may be useful to recapitulate the names of the thinkers discussed. They are, in the first volume: Descartes, Malebranche (as representing Occasionalism), Spinoza, Leibniz, Wolff, Crusius, Bacon, Hobbes, Locke, Berkeley, Hume, the Scottish School (Reid), Kant; in the second volume: Maine de Biran, Schopenhauer, Trendelenburg, Herbart, Lotze, Comte (omitted in the table of contents), Mill, Ernst Laas and Carl Goering ("German Empiricists"), Spencer, Riehl, Hartmann and Volkelt ("Transcendental Realists"), Wundt. The work is rounded off by a general "Introduction," a special introduction (to the first volume) on "The Causal Conception in the Natural Science of the seventeenth and eighteenth centuries," and conclusions (to the second volume) on "The Causal Conception in the Natural Science of to-day" and "The Causal Conception in the Psychology of to-day".

The maxim of Causality—or, more generally, of Uniformity of Nature—whether it is explained according to rationalistic or experiential principles, may be stated either as a law of per-

sistence or as a law of constant sequence. With the rationalists of the seventeenth century, it tended to take the form of a law of persistence of matter and "motion". Simultaneity of cause and effect, and the implication of effect in cause, result from the purely *logical* view of the relation. To this view the ancient position that nothing is created or destroyed was taken as equivalent, and was asserted for the whole history of the world, so far as accessible to science. Revived Atomism asserted it for matter; and by Descartes and Leibniz it was applied in different ways to motion. Here, what the great speculative thinkers really did was to "postulate" that in motion there is something quantitatively constant. By purely rational deduction no approximately accurate formulation of that which is constant was arrived at except by accident. Leibniz's view that motion, when there is question of its constancy, ought to be measured by *vis viva* and not by momentum, could not be established deductively against any other view. Yet it was the constant affirmation of such extremely general principles, supposed to be axiomatic, that pointed out the way to special investigators. The atomic hypothesis has been taken up into exact science. So also the assertion of constancy in "motion" got accurate formulation and proof, when in recent times the law of Conservation of Energy was experimentally established. A law of a certain type, or a very general hypothesis, had all along been in view as a possible means of co-ordinating phenomena. Scientific insight had only to detect the right moment for recurring to the hypothesis, or for seeking accurate experimental verification of a precise formula.

With the theories based on Gravitation and Natural Selection, as might have been shown at length, the case is somewhat different. Here an observed process, which had only been taken into account within a small range, or had been incidentally generalised in a more or less conjectural manner by some isolated thinker, was all at once taken up and made the principle of a system of scientific explanation of the highest generality. For this reason the achievements of Newton and Darwin are rightly looked upon as the supreme expressions of scientific genius. Philosophic thought had not so distinctly prepared for them as for the achievements of Dalton and Joule.

The *method* of the rationalistic thinkers, we may say in general agreement with Dr. Koenig, is to a large extent justified. A large part of science owes its origin to philosophic thought ascending very rapidly to the most general principles; and even where philosophic thought has had less part in the origination of scientific theories, bold speculation and hypothesis are just as necessary as experiment. It was the conditions of *proof*, as distinguished from discovery, that remained to be established by the philosophic experientialists. The rationalistic error was not in inventing theories before finding out all that can be known of the facts, but in supposing that there can be any valid

deduction of a natural process from principles of knowledge apart from the constant appeal to experience.

This error, as Dr. Koenig shows, assumed two forms. One of its forms was the supposition that effects can be deduced from causes by the logical law of Identity. The other was the attempt to construct natural laws by pure mathematics. In the thinkers of the seventeenth century the two forms are not clearly distinguishable. Among the post-Kantians Herbart illustrates the attempt to reduce all science—mathematics included—to formal logic; while the idea of a geometrical construction of effects from causes is illustrated in its purity by Trendelenburg. The Herbartian view, looked at from one side, is an extreme rationalism. Yet when the Kantian distinction between "analytic" and "synthetic" judgments disappears in complete vagueness, so that no *a priori* is recognised but the laws of formal logic, an approach is made to experientialism.

The first advance beyond pure rationalism on its own lines was the introduction by Leibniz of the principle of "sufficient reason," or of "ground and consequent," as a scientific principle. Theoretically it was still held that all laws ought to be deduced from immediately evident principles of knowledge; but, when deduction was impossible, the actual existence of an experimental sequence under proper conditions was held to indicate that one phenomenon is the "cause" of another which constantly follows it. That is to say, if we knew its nature thoroughly we should be able to think it as the intelligible "ground" of the "effect," or succeeding phenomenon, which accordingly is to be regarded as its "consequent". The appeal to experience was admitted more explicitly by Wolff, who expressly asserted the distinction between the "ideal" and the "real" ground, left vague by Leibniz; and still more explicitly by Crusius, who made the real co-ordinate with the ideal ground, to which it had hitherto been subordinated. Thus the Leibnizian rationalism, even before Kant, was still further weakened.

In the meantime the rationalistic view, consistently worked out, had led to the assertion of a stringent determinism. Spinoza had here developed the doctrine to its legitimate conclusion. He also, first of the moderns, had found a reconciliation of determinism with the "moral freedom" of man. This was not a new problem taken up by Leibniz, as it is sometimes made to appear; nor did Leibniz, in his solution of it, succeed in attenuating the Spinozistic determinism to the smallest extent. His "moral" or "teleological" determination is no less really "necessary" than the logical or mathematical determination of Spinoza.

On the ground of experientialism Hobbes had already asserted a deterministic doctrine as rigorous as Spinoza's. By Hobbes and Spinoza, whether determinism was strictly demonstrated or not, the proof of "metaphysical freedom" drawn from the declaration of self-consciousness had been rendered once for all impossible. This is henceforth a "classical truth".

The further transformation of rationalism by Kant consisted, so far as causation is concerned, in assigning not only all particular causal sequences, but the form itself of the causal relation, to experience; the thinking mind being held to contribute simply the affirmation of the causal relation as "necessary". This affirmation is *a priori* because it is added to the "given" experience. And nothing in it is *a priori* but the "intrinsic constraint" by which the given causal order is turned into a necessary connexion. Thus rationalism in its older form has entirely disappeared. The results of the English critical movement have been incorporated in the Kantian doctrine. The doctrine is now, as the author expresses it, "Positivism"—but with "Apriorism" superposed.

More exactly, while upholding "Positivism" against "Rationalism," and "Phenomenalism" against "Realism," Dr. Koenig at the same time places himself on the side of "Apriorism" against "Empiricism," and of "Intellectualism" (as he says) against "Sensualism". To understand his theory of Kant's view of causation we must therefore follow out separately his history of the *a priori* doctrine in modern philosophy.

The "*a priori*" is not the "innate". Locke's polemic against "innate ideas" present as such before "perceptions," was fully justified. Even in the Cartesian school, innate ideas have a "logical" rather than a "psychological" significance, though Descartes did not always make the distinction sufficiently clear. Leibniz in his polemic against Locke, insisted more expressly on this distinction, and, by his insistence on it, was the first to put forward "theory of knowledge" as a philosophical doctrine independent of psychology. Both Descartes and Leibniz had at the same time attempted a psychological defence of their common doctrine. Ideas, it was said, are present in the mind before experience "potentially" though not actually. Leibniz therefore professed, along with logical "apriorism" a form of psychological "nativism". Kant went beyond this point and effectually established "apriorism" as a theory of knowledge without mixture of psychology. Knowledge, he held, can only be explained in virtue of *a priori* elements, "logical" and not "psychological". What philosophy needs is an "epistemological hypothesis" showing how certain "transcendental" elements, as they may be called, since they are not discoverable in experience, but are necessary to constitute it, can explain knowledge, which cannot be explained without them. Such an epistemological hypothesis is furnished by the Kantian system.

The distinction between psychology and logic, it may be at once conceded to Dr. Koenig, is a very important one. But is it applicable in the particular way he here contends for? Are not all elements in "knowledge" elements in mind, and, as such, part of the subject-matter of psychological science? It may be said that "psychological" elements become "logical" when they are either naturally in conformity with, or are voluntarily brought into conformity with a certain intellectual "norm": but they do

not for that cease to be psychological; and the bringing of them into conformity with a norm is itself a psychological process. Dr. Koenig even is disposed to find in Prof. Wundt's "apperception" the intellectual "activity" that contributes the *a priori* element in knowledge. This, he supposes, may turn merely "associative" into "logical" processes. But "apperception," if it exists at all, is a psychological phenomenon just as much as the mere associative process to which it is supposed to add itself.

These remarks have reference to Thought in general rather than to the special question of Cause. When we turn to this, the point becomes still clearer. Every *a priori* theory of Cause consists essentially in the attempt to show that there is some mental (that is, psychological) element in the conception, to the mere nature of which belongs the conferring of logical validity. That this is the case with an *a priori* theory such as that of Maine de Biran—"the French Kant"—Dr. Koenig admits. Here the causal conception is derived from experiences of volition; in these experiences causal efficiency is supposed to be known directly. Dr. Koenig's criticism is that, although this theory of the causal conception may be true as a theory of its psychological origin, the validity of the law of causation is not thereby proved. But, in Kant's own theory, is it otherwise than by leaving the conception of mental "activity" quite vague that the appearance comes of introducing into the mental life something that is not "psychological" at all, but purely "logical"? If an accurate expression is desired for the "*a priori* elements in knowledge," where can this be looked for but in a determination of them by psychological analysis?

"Apriorism" it is clear, needs a psychological basis as much as experientialism. Experientialism, on the other side, can employ the distinction between logic and psychology for the vindication of scientific knowledge just as much as "apriorism". It was in part the mixture of psychological with logical points of view which, in Hume's theory of Cause, gave the experiential doctrine its sceptical colouring. To have shown this, according to Dr. Koenig, was a considerable portion of Kant's service. Now if, in reference to the conception of cause, Kant had simply pointed out this distinction, and for the rest accepted Hume's doctrine, his position would have been pure experientialism. Unless his "apriorism" can deal more effectively with the sceptical view of Cause than by a distinction which the experientialist can also make, it seems, from the logical point of view, a superfluous addition.

While taking from Hume the conception of causation as a particular kind of sequence, Kant, in Dr. Koenig's view, made it possible, as it is not for the pure experientialist, to regard causation as "necessary"; and this he was enabled to do by his philosophical "hypothesis". In this hypothesis consisted his material advance on Leibniz. While Leibniz had assumed a merely "analytic" function of the mind, Kant assumed an original "synthetic" function. "Synthetic knowledge *a priori*," made

possible by this function, is found first of all in mathematical axioms; but the synthetic function of the mind contributes also an element to the conception of Cause. Into the question of mathematical axioms and its solution on experiential grounds it is not necessary to enter. The question of Cause is what we have specially to deal with; and it can be treated separately. It may be admitted that the clear distinction of mathematical axioms, under the provisional designation of "synthetic judgments *a priori*," from formal inferences on the one side and from *a posteriori* knowledge of natural processes on the other, was a very important step in theory of knowledge, and constituted a definite problem for experientialism; and yet it may be contended that tke special Kantian apparatus has done nothing for the problem of Cause. To decide upon its value here, let us see first more precisely what can be done by experientialism. Dr. Koenig himself provides us with material for the decision.

The causal axiom, in his view, is essentially an assertion of "invariable and unconditional sequence". This view he finds with greater or less perfection in Hume, Kant, Schopenhauer, and Mill. To Hume he ascribes the first quite definite determination of the causal problem; to Kant the banishment of Hume's scepticism by means of the *a priori* doctrine; to Mill the statement of accurate criteria by which causal connexions may be distinguished from connexions that are not causal; and to Schopenhauer an anticipation, mixed with some inconsistencies, of the special form taken by phenomenism in Mill's view of Cause. Against Mr. Spencer and others, he urges that the causal axiom, as applying to sequences, cannot be deduced from any law of "persistence" or "conservation". The law of conservation of energy does not tell us what other form of energy will emerge as the result of the disappearance of energy in one form; it only tells us that the quantity will remain unchanged. Phenomena may involve the presence of the same quantity of energy and yet be qualitatively different. The law of conservation, therefore, does not necessarily imply that the same cause has always the same (qualitative) effect. But this is required by science, and is asserted by the causal law in its ordinary form.

In recent times, the establishment of the principle of conservation of energy has helped to bring back the view of cause and effect as "identical". A "law of identity" of cause and effect, in the sense of quantitative equivalence, might perhaps be allowed if it were not for the tendency to regard it as deducible from the logical law of the same name. Dr. Koenig, in complete accordance with experieutial principles, shows the impossibility of any such deduction. The Heraclitean doctrine of "absolute becoming", as it is well said in a quotation he makes from Lotze (ii. 167), cannot be refuted by the logical law of Identity; "for this only asserts that *m* is *m in case* it is, and *so long as* it is, but *whether* it is, and whether it must *always* be if it is once, upon those points the law decides nothing". A physical "law of

identity," in short, is an assertion about real existence, and no one can be forced to admit it by the mere requirement of intellectual consistency. In this respect—that is to say, in being a material and not a purely formal principle—it is entirely on the same ground as the law of causation of successive events.

This view in its general sense, an experientialist must accept. Yet perhaps rather more significance ought to be assigned to laws of Conservation than Dr. Koenig allows. It may be conceded that such laws are not by themselves sufficient to express the Uniformity of Nature in its full meaning; yet they are the most stringent expressions of that principle. A physical "law of identity" has even a certain special force against the sceptical view of causation. The scientific statement of it is more easily detached from any psychological account of the way in which it was arrived at, than is the law of successive events. To show how we come to believe that "every event has a cause," and how our belief might be determined even if the proposition were not true, seems to throw doubt on the truth of the proposition itself. The causation of successive events is undoubtedly capable of scientific interpretation as Mill has shown; and it is indispensable scientifically: but the popular origin of the belief in causation clings to it. A law of conservation is not only more easily viewed with regard simply to its truth or falsehood, but also, if we seek for its origin, we find it in the first impulses of speculation rather than in the "customary conjunctions" of common sense.

Up to this point, what Dr. Koenig lays down, and what has been said by way of objection or supplement, is all on the ground of experientialism. The position that can now be stated is this. Psychologically, either the view of Hume or of Maine de Biran as to the origin of the belief in causation might be accepted, and the truth of the causal law would neither be proved nor disproved. The belief may have its root in experiences of volition, or it may spring simply from observations of external sequences. In either case, the law of causation is to be affirmed not because of its origin, but because it is an indispensable postulate of scientific investigation, and is constantly verified and never contradicted by duly tested experience. Nevertheless, it must be admitted that there remains always for the experientialist the logical possibility of an exception to it. This is much insisted on by Dr. Koenig; and he apparently regards it as the great logical difficulty passed on from Hume to Kant, and not to be solved except by the Kantian "apriorism".

There is of course no absolute inconsistency between this view and the admission, which Dr. Koenig makes, that the form of temporal succession, asserted by Kant as the "schema" of Cause, cannot be deduced on Kantian principles; or at least that the deduction of it is a gap which no Kantian has yet filled up. For "apriorism," in Dr. Koenig's interpretation, does not profess to assign even the *form* of the causal connexion without an appeal to experience. By this interpretation, one great difficulty of

Kantianism is undoubtedly avoided. A more serious difficulty, however, remains. For it seems as if, when the "synthetic unity of apperception" has once conferred "necessity" of thought, no scepticism as to the strict universality of the causal connexion ought to be any longer possible. Yet, for Dr. Koenig, it is not only possible but legitimate. The position of Lotze, that absolutely "new" causes are from time to time introduced into the world, is, he says, for the Kantian as well as for the pure experientialist, irrefutable. Where then is the gain for the Kantian? Is the Kantian position, thus interpreted, even self-consistent?

In any attempt at solution of the logical difficulty put by the sceptic, Kantianism would have to proceed on precisely the same lines as experientialism. Even for the theoretical sceptic as to universal causation, there may, as Hume showed, be no grounds for holding the uniformity of nature to have ever actually been interrupted. Further, if we desire a consistent metaphysical doctrine, we may be impelled to an absolute determinism carrying with it uninterrupted uniformity of nature as a corollary. A metaphysic like that of Lotze may be rejected because it does not give intellectual satisfaction. The adherent of Kant's theory of knowledge has here exactly the same arguments at command as the experientialist; but he has no advantage.

Two points may now be selected where the Kantian influence seems to have made Dr. Koenig take up a more uncertain position than he would otherwise have done. The first is as to the relation of mind and body. Psychological causation and physical causation, he would feel himself obliged to hold, must be treated as unbroken and without mutual interference, if it were not for the "activity of apperception". This he takes as a fact, and finds to be the only fact inconsistent with a denial of "psychophysical" causation, or the production of physical effects by a psychical activity that has no organic correlate. Isolated as it is, the fact cannot be denied; for it is required to explain the "intrinsic constraint" from which comes the peculiar necessity of *a priori* truths. With some other writers, he accordingly finds it an advantage in Hume's and Mill's theory of Cause that "psychophysical" and "physico-psychical" causation are not excluded on principle. There is, it may be allowed, in the denial of any real break either in the series of mental or physical causes a reassertion of an old rationalistic position. The experiential philosopher, however, has no difficulty in modifying Hume's or Mill's thought to this extent. The Kantian "apriorism," on the contrary, has introduced a special difficulty, as we see. To Dr. Koenig this difficulty appears so great that it leads him to reject what he admits to be otherwise the most consistent view, and the view best supported by experience.

The second point is as to the form of idealism to be adopted. Dr. Koenig holds firmly to the Kantian "Transcendental Idealism". This idealism, he acknowledges, has something in common with "Transcendental Realism"—the distinctive point

of which is to retain in a more or less attenuated form the belief in an existence that is nothing if not "objective," and that yet has a reality apart from its relations to all subjects. In common with this doctrine, it refuses to resolve "the object of the naïve realist" into "mere representations". It recognises the rights of "empirical realism" against "empirical idealism". In other words, Dr. Koenig, like most Kantians, stops short of the consistent idealism arrived at on experiential grounds. The connexion of "apriorism" with this inconsequence is evident when he admits that Kantianism involves a difficulty never yet solved — and which he himself does not profess to solve—in the "coincidence of the empirical (corporeal) with the transcendental subject". For a thoroughgoing idealism this difficulty does not exist. When idealism is held quite consistently, the "corporeal subject" (as it has been put) is purely phenomenal. On the common ground of an idealistic and experiential theory of knowledge, different metaphysical doctrines may be arrived at; but the particular difficulty of accounting for the manifestation of a "transcendental subject" in a material organism has disappeared. Dr. Koenig's own view, except at certain points, is consistently phenomenist. His lapses into realism are clearly due to over-strict adherence to Kant.

Generally, there is more in Dr. Koenig's book for an experientialist to agree with than to disagree with. No attempt has been made to convey an idea of his full and careful examinations of particular thinkers. It can only be said that his exposition is of sustained excellence; being everywhere clear, impartial and appreciative. The result of the whole is to display one thing especially; and that is the steady philosophical advance that has been made in the discrimination of scientific conceptions and in the interpretation of natural law. To show this, no schematic arrangement of thinkers according to a theory of the historical movement has been necessary. When, in the first volume, Dr. Koenig places the Continental rationalists in a series by themselves, then the English experientialists, and lastly Kant (with Reid interpolated), he simply follows the traditional order without intending to maintain that either series is a wholly separate movement uninfluenced by the other. Indeed, he remarks that one of the few cases of strict "continuity" that the history of philosophy presents is the discussion of mental "relations" by Hume, Kant and Herbart. The typical example of philosophical continuity is, with him, the succession from Locke, through Berkeley, to Hume. This absence of any attempt at exact historical arrangement of thinkers in a line of development makes the advance that the reader may see in the whole movement, and the continuity of the movement in a certain sense, more impressive. Perhaps it ought to be added that—as Dr. Koenig has borne in mind—a condition of perceiving the development is to keep in view especially the philosophy that has been in some kind of contact with science. This does not seem unreasonable when that which is in question is the logic of scientific thought. THOMAS WHITTAKER.

VII.—NEW BOOKS.

[*These Notes* (*by various hands*) *do not exclude Critical Notices later on.*]

Philosophy and Theology. Being the First Edinburgh University Gifford Lectures. By James Hutchison Stirling, LL.D. (Edin.), &c. Edinburgh: T. & T. Clark, 1890. Pp. xvi., 407.

These Lectures do not come up to expectation. They are the first complete (two-years') Gifford course yet printed; Professor Max Müller's *mélange* of more than a year ago (see Mind xiv. 593) standing for only half of the first Glasgow course. Edinburgh had taken care to secure for first discharge of a philosophic task the services of an acknowledged expert; and nobody, of whatever way of thinking, can have looked forward without extreme interest to Dr. Hutchison Stirling's deliverance on any part or aspect of the appointed subject of Natural Theology. Nor, in choosing for his special topic the historical development of the "proofs" for the existence of God, does Dr. Stirling fail to say, of course, many a notable and well-pointed thing, or at times, as in regard especially to Aristotle and Kant, to broaden out into general philosophical delineation with a power all his own. But the Lectures, as a whole, sin by great irrelevance. Only twenty of them altogether, they were none too many for effective treatment of a subject requiring just the proved philosophical ability and comprehensive historical knowledge of the lecturer. One cannot, then, too much deplore the waste—for such a course—of so much time and space on effusions of the good Lord Gifford himself; on mere literary performance of Carlyle, Emerson, and the like; on general talk *about* Hume that almost overbears what has to be said *of* Hume; or on the *Darwiniana* and other *ana* that keep Dr. Stirling, through as many as four lectures, from ever closing with philosophic grip upon "Darwin and Design". The reason of such misfortune? Evidently, it is nothing else but some unhappy fancy of the lecturer that he must above all keep tickling the ears of mixed audience. Professor Max Müller could do that at Glasgow without effort, by virtue of a naturally episodic style. Without or with effort, if it is to be the manner of Gifford Lectures,—one can but say that the prospect for Scotland is not good through all the years that must, in decency, pass before the Charity Commissioners lay reforming hands on the rich foundation. Dr. Stirling sets out to deal with "the proofs" on the affirmative side in the first half of the course, and in the second half on the negative side. The "affirmation," except for incidental references to some moderns, is carried no farther than down to Anselm, with whom in the 11th century the ontological proof is held to have first and at the same time finally emerged, after the cosmological and the teleological had already found adequate expression from the ancients, notably Aristotle and Cicero. The "negation" is made to begin with Hume, and is then traced through "comparative and superlative degrees" in Kant and Darwin; "it being only," says the lecturer (p. 219), "since Mr. Darwin that, as the phrase goes, atheism has set in like a flood". Passing by a rhetorical exaggeration of this kind, the more as it is fairly balanced by another such remark (p. 221), that "after Pericles, indeed, irreligion and atheism became in Greece rampant,"—what strikes one in the general division of the subject is the artificial character of it, by way of mere time. And Dr. Stirling is so little unconscious of this himself that he is careful to add at once, on p.

219, that neither is the modern world "to be considered exclusively or predominatingly negative," nor the ancient "exclusively or predominantly affirmative". But that being so, it seems a pity that we do not hear more of the *grounds* of ancient negation, or at least more of the phases through which the later affirmation has passed. However it be with the name 'Natural Theology,' which in its accepted sense may be not older than Raymund of Sabunde in the 15th century, there was too much theistic argument throughout the Middle Age (after Anselm), and too original and varied a presentation of the "proofs" in modern times from Descartes onwards, to leave it at all satisfactory that Dr. Stirling should leap straight from Anselm after the ancients on one side over to Hume on the other. And even from Raymund's laying-out of Natural Theology in the later days of Scholasticism, the reminder might have been taken that besides the three rational proofs, which Kant riddled with criticism, there is the other so-called 'moral proof,' adopted by Kant himself, which, as much as the ontological (at least), deserves the name of 'natural'. It is one of Dr. Stirling's rather surprising omissions to take no express account of this, either on the affirmative or on the negative side: his ardent advocacy of the other proofs, most of all the ontological, need not in the least have suffered by extension of his view to the particular argument which, in modern times, has gained more and more the upper hand with believers. In Dr. Stirling's own philosophical attitude as now disclosed, what is otherwise most noteworthy, perhaps, is his declared sympathy not only with Aristotle over Plato, but with men like Bacon and Newton for whom Hegel had so little esteem. On Hegel himself, at least when occupied with Philosophy of Religion, there is at p. 188 a judgment passed of rather curious severity.

The Principles of Psychology. By WILLIAM JAMES, Professor of Psychology in Harvard University. 2 Vols. London: Macmillan & Co., 1890. Pp. xii., 689; vi., 704.

This long-expected treatise, though it saw the light some weeks ago on the other side of the Atlantic, has come to hand upon this side only just in time not to fail of mention here. It will of course be duly subjected to detailed Critical Notice, as soon as its freight of matter, great as well as rich, can be sufficiently grasped. An equable treatment of all the main topics of psychology, it does not supply. The author himself notes the enforced omission of pleasure and pain and of the moral and æsthetic feelings and judgments; while others may remark, at a glance, something of haphazard in the selection and ordering of the topics that are discussed. The first glance, however, discovers also a great 'actuality' in the treatise. Hardly any of the topics is other than of pressing interest at the present stage of psychological advance; and most of them are handled with that close regard to the particular facts of experience without which no farther real advance is possible. This particularity of treatment is, perhaps, most beneficially apparent in the long chapter on "The Perception of Space" (ii. 134-282), known in first draft to the readers of MIND since 1887. There is no other discussion of this topic in English that comes near in point of full comprehensiveness to Prof. James's. In its revised form, his theory of space-perception has now the advantage of appearing in its natural surroundings; and the interesting question for those to whom, in spite of all its elaboration, it did not prove convincing before, will now be to see whether it is sufficiently strengthened by its proper accompaniments. However this may turn out, of the human interest which Prof. James has the power of giving to the discussion of this and every other psychological topic, there can be

no question. Readers he could not fail to have—of the continuous, as well as of his "skipping" (say rather, referring), sort—though he had made his volumes even bigger than they are.

Handbook of Psychology. "Senses and Intellect." By James Mark Baldwin, M.A., Ph.D., Professor of Logic and Metaphysics in the University of Toronto. Second Edition, revised. London: Macmillan & Co., 1890. Pp. xv., 343.

Also from America comes this psychological text-book, now in second edition made more accessible, by London publication, to English students. It was shortly noticed, on first appearance at New York, in Mind xv. 138. Only a few lines of new matter are inserted in the present edition; but the opportunity may be seized to recommend the book with some more emphasis than before as a very serviceable manual for students. It is also due to the author to say that he came too near to being charged here with a design of intuitionistic philosophising under psychological mask. Though he might use newer bottles than he here and there does for his new wine, he is not unwarranted in claiming now, as he claimed from the first, that his business is scientific psychologising—only not without regard to the requisite philosophical interpretation beyond. For students, the most—perhaps the only—obvious shortcoming of his treatment is the absence of any direct exposition of the neurological conditions of mental process. Without such, in more or less condensed form, the student has good right to complain of the anatomical and physiological language inevitably thrust upon him at the stage of Sense, if not also elsewhere. Nor is the omission in any way made up by a figure of the outer and mesial aspects of the cortical "motor area," now given as frontispiece to the book in connexion with the few additional lines inserted, at p. 114, about localisation of brain-function. Not that, unless a good deal more! one is forced to exclaim. The author's promised volume on "Feeling and Will" is, of course, wanted to make the present volume fully serviceable.

Are the Effects of Use and Disuse inherited? An Examination of the View held by Spencer and Darwin. By William Platt Ball. ("Nature Series.") London: Macmillan & Co., 1890. Pp. xii., 156.

This book, though small and not closely printed, is well filled with matter. The author argues against the Lamarckian doctrine of "use-inheritance," defined as "the direct inheritance of the effects of use and disuse in kind". After setting forth the "Importance and Bearing of the Inquiry" he goes on to deal first with Mr. Spencer's "Examples and Arguments" contained in *The Factors of Organic Evolution* (see Mind xii. 293). "Darwin's Examples" are next considered; the question of "Inherited Injuries" is then separately treated; and the book ends with some "Miscellaneous Considerations". Account being taken of "panmixia, or the withdrawal of selection"; of "the great principle of economy, which is continually at work shaping organisms, as sculptors shape statues, by removal of the superfluous parts"; of "unconscious or indirect" artificial selection, the possibilities of which, in the case of domestic animals, have not been sufficiently considered; and of the direct effects of use and disuse during the lifetime of the individual; further, the consideration being kept in view that, "broadly speaking, the adaptive effects ascribed to use-inheritance coincide with the effects of natural selection"; there can be little ground, the author thinks, for upholding use-inheritance as a distinct factor of evolution. The

hereditary consequences of mutilations and diseases are due to direct morbid actions upon the reproductive elements of the organism, rather than to changed functions influencing these. Such consequences are, for the rest, exceptional. Parental modifications in general, as is required by Galton's and Weismann's theory of heredity, "are irrelevant to those transmitted to offspring". There are also positive difficulties in the way of admitting use-inheritance. The result of the whole is well formulated at p. 95: "Use-inheritance appears to be so relatively weak a factor that probably neither proof nor disproof of its existence can ever be given, owing to the practical impossibility of disentangling its effects (if any) from the effects of admittedly far more powerful factors which often act in unsuspected ways". The author has had in view the social bearing of the inquiry; in relation to which his general conclusion runs thus: "The effects of use and disuse—rightly directed by education in its widest sense—must of course be called in to secure the highly essential but nevertheless *superficial, limited, and partly deceptive* improvement of individuals and of social manners and methods; but as this artificial development of already existing potentialities does not directly or readily tend to become congenital, it is evident that some considerable amount of natural or artificial selection of the more favourably varying individuals will still be the only means of securing the race against the constant tendency to degeneration which would ultimately swallow up all the advantages of civilisation". Applications are only briefly and rather superficially touched upon; but the essay maintains its scientific interest to the end, and the general bearing of the theory of heredity on social action could not be better pointed out.

Animal Life and Intelligence. By C. Lloyd Morgan, F.G.S., Professor in and Dean of University College, Bristol, &c. London: Edward Arnold, 1890-1. Pp. xvi., 512.

A "consideration of Animal Intelligence, from the scientific and philosophical standpoint". On the scientific side, the author has found it necessary to go back upon a consideration of Organic Evolution in general, especially in view of the recent work of Weismann and other biologists. The question of Intelligence in animals is not reached till the second half of the volume. It is then treated under head of—their Senses, their powers of Perception and Intelligence, their Feelings (Appetences and Emotions), their Activities (Habit and Instinct); with a chapter (viii.) interpolated on "Mental Processes in Man". Finally, ch. xii. is occupied with the author's philosophical interpretation of "Mental Evolution". Readers of Mind (xi. 174). had evidence years ago of Prof. Ll. Morgan's effective interest in "The Study of Animal Intelligence". Critical Notice will now follow of the present more definitive result of his studies.

Proceedings of the Aristotelian Society for the Systematic Study of Philosophy. Vol. I., No. 3 (pt. 2). London: Williams & Norgate [1890]. Pp. 77-165.

Some notes by the late Miss Naden, three papers (on Society and State, on Herbert of Cherbury, and on Beauty), and two "Symposia" (on the Relation among the Fine Arts, and on the Distinction of Feeling, Cognition and Conation, with three interlocutors in each case), make up the present issue. One is more struck by the variety of philosophic topics here taken up by the Aristotelian Society than, so far as appears, by anything particularly "systematic" in the study of them. The most

notable of all the pieces given is Mr. G. F. Stout's independently grounded acceptance of the tripartite division of Mind (pp. 142-50): in the end he is in such "substantial agreement" with Prof. Bain that the latter, who closes the discussion, contents himself with little more than an accentuation of the fact.

Life of Arthur Schopenhauer. By W. Wallace, Whyte's Professor of Moral Philosophy, Oxford. London: Walter Scott, 1890. Pp. x., 217.

This volume, belonging to the "Great Writers" series, interweaves critical appreciation with biographical narrative in a very skilful way. The distinctive conditions of life and resulting aims that mark off Schopenhauer among German thinkers are impressively indicated in a first chapter, and then, after two others mainly biographical, cc. iv., v. (pp. 89-137) are devoted to the great philosophic work which he produced at the age of 30; while, in the remaining two chapters, biographical interest is sustained by free reference to the self-disclosures made in the occasional essays of later life but most of all in the variegated *Parerga u. Paralipomena.* There should be no need now to go beyond what Professor Wallace has written for a general understanding of the philosopher's life and character. The Bibliography (by Mr. J. P. Anderson) given at the end, according to the rule of the "Great Writers" series, is admirably full.

Studies in Pessimism. A Series of Essays, by Arthur Schopenhauer, selected and translated by T. Bailey Saunders, M.A. London: Swan, Sonnenschein & Co., 1891. Pp. 142.

This is the fourth volume of selections (the others noted in Mind vols. xiv., xv.) which Mr. T. B. Saunders has been happily making from the *Parerga u. Paralipomena.* It includes ten pieces, of which the more notable are "On the Sufferings of the World," "Further Psychological Observations," "On Education," and "On Women". The translation runs uncommonly well. Readers of Prof. Wallace's *Life* cannot do better than supplement it first by turning to Mr. Saunders's handy volumes.

The Development of Theology in Germany since Kant, and its Progress in Great Britain since 1825. By Otto Pfleiderer, D.D., Professor of Theology in the University of Berlin. Translated under the Author's supervision by J. Frederick Smith. London: Swan Sonnenschein & Co., 1890. Pp. xii., 403.

This work by the well-known Berlin Professor has been written (in German) expressly for "The Library of Philosophy," inaugurated last year by the translation of Erdmann's *Grundriss der Gesch. der Philosophie* (see Mind xv. 132). It appears in English before the German original; and, to judge by the general style, the exceptional pains taken with the rendering, by author and by editor (Mr. J. H. Muirhead) as well as by translator, has had very satisfactory result. (This is more, by the way, than can truly be said of the translation of *Erdmann*, which a closer inspection has shown to be not a little defective in that most important division occupied with "Modern Philosophy from Kant to Hegel's death".) The work is disposed into four parts: (1) The Basis of Modern Theology in German Idealistic Philosophy; (2) The Evolution of Dogmatic Theology under the Influence of Idealistic Philosophy; (3) Biblical and Historical Theology; (4) A Survey of the Progress of Theology in Great Britain since 1825. The fourth part (pp. 303-401),

which seems very well and comprehensively done, has a special interest for the English reader. It includes a large amount of general philosophical reference; while the first part (pp. 1-82) may be called strictly philosophical. Critical Notice will follow.

The Eŵe-speaking Peoples of the Slave Coast of West Africa: Their Religion, Manners, Customs, Laws, Languages, &c. By A. B. Ellis, Major, First Battalion West India Regiment; Author of *The Tshi-speaking Peoples of the Gold Coast*, &c., &c. London: Chapman & Hall, 1890. Pp. viii., 331.

After his remarkable volume, *The Tshi-speaking Peoples of the Gold Coast* (see Mind xiii. 291), Major Ellis now proceeds to give an equally thorough and original account of the more organised communities dwelling eastwards of them on the "Slave Coast". Of these the chief is Dahomi, the history and institutions of which fill a large space in the book. Interesting as are the descriptions of the political, military, religious and domestic regulations of that highly organised savage kingdom, the anthropological interest is still greater where the more inchoate phases of development of negro beliefs and customs are dealt with. In the present volume what is most noteworthy is the account of the way in which "local deities" develop into "general deities". Communications being easier, and the priesthood having consequently become better organised than among the Tshi-speaking peoples, the priests have blended local gods of similar attributes into a general god everywhere represented by the same image and served with the same ceremonies. The general deities thus formed become independent of any tangible abode, and indeed "to all intents and purposes omnipresent". This change was probably promoted by the priests' having represented that the god entered the image, before which, consequently, sacrifice and prayer might be made instead of in the actual habitat of the god. The tie between the god and his habitat having been thus weakened, the notion of the god as an "indwelling spirit" has become obscured. Amulets also are no longer thought to derive their special properties from an indwelling spirit communicated to them. They are therefore no longer, as among the Tshi-speaking peoples, the "tutelary deities of individuals," but are simply tokens consecrated to a god. Still the notion of gods as indwelling spirits has not disappeared; being kept alive by the many local deities, exactly like those of the Gold Coast, which remain, though in a depressed state. Next above these local deities are the "tribal deities" worshipped by one or more tribes. Highest in order are those that the author names pre-eminently "general deities"—*viz.*, those worshipped by the Eŵe-speaking peoples as a whole. The highest of all, though "not a supreme being or creator," is Mawu, "the indwelling spirit of the firmament". By the natives and by some missionaries there has been a "blending together of Mawu and Jehovah". The supposition that Mawu is derived from what the natives have heard from the missionaries, Major Ellis is disposed to regard as an error; and he goes on to say that, from additional evidence since collected, he thinks the view he formerly expressed concerning the origin of Nyankupon, the parallel god of the Tshi-speaking peoples, was incorrect. Instead of his being "the Christian God, borrowed and thinly disguised," Major Ellis now holds that "he is, like Mawu, the sky-god, or indwelling spirit of the sky; and that, also like Mawu, he has been to a certain extent confounded with Jehovah". The conception of an "indwelling spirit," first formed in the case of man and then carried over to all natural objects, is, as Major Ellis previously argued, the starting-point of negro conceptions

of deity; and this view is confirmed by his later investigations. The religion of the communities of the Slave Coast is simply a more developed nature-worship, and is not derived from ancestor-worship, but proceeds in a direct line from animistic conceptions of objects. Ancestor-worship, however, is met with in Dahomi, as in Ashanti, and there have been noted four distinct "instances of the deification of men by the eastern Ewe tribes, of which we have no example either on the Gold Coast or amongst the western Ewe tribes". In no case, however, "has the fact that these demi-gods were formerly men been lost sight of". Two of the persons deified (both kings) were of maleficent attributes during life; the remaining two are worshipped as benefactors of mankind. Among the Yoruba-speaking peoples (farther east)—to whom the author hopes to devote a separate volume—ideas of metempsychosis have developed; and these have to some extent influenced the more easterly of the Ewe-speaking tribes. When these ideas appear, legends of the origin of gods begin to spring up; the explanation of a deity as the indwelling spirit of a particular object, present in it as long as it has existed, being no longer found sufficient.

Theory of Physics. A Rectification of the Theories of Molar Mechanics, Heat, Chemistry, Sound, Light, and Electricity. By Camilo Calleja, M.D. London: Kegan Paul, Trench, Trübner & Co., 1890. Pp. xvi., 245.

This "Theory of Physics" is preliminary to a "Universal Physiology" or "whole abstract knowledge of nature". The author's aim now is to reduce all propositions regarding motion to forms of the law of Conservation of Energy; this being "the sole fundamental principle of molar movements as it is of universal dynamics". In relation to the general system of things the conservation of energy is subordinate. "Matter is not capable by itself alone of producing any change, the continuity or persistency of Cosmos in its uniform actual state depends on the Supreme Power which directly acts upon organism alone. Therefore our general view may be embodied in the following proposition: *The Universe is an organism in which no other true agent or cause but the Creator acts, and the primordial change effected by the Creator is solely and continuously produced upon living matter*; thus the activity of life becomes the proximate cause of all changes of organic matter, and from this arises the manifested or phenomenal uniformity of the cosmic system." Apart from interpretations of physical and chemical laws, there are some suggestions as to the way in which the idea of an "organic system of the universe" is to be connected with that of "cosmic mechanism"; but for their working out we must wait till the "Universal Physiology" comes to hand.

Belief in God: Its Origin, Nature and Basis. By Jacob Gould Schurman, Sage Professor of Philosophy in Cornell University. New York: Charles Scribner's Sons, 1890. Pp. x., 266.

Six lectures, entitled (1) Agnosticism, or the Impossibility of Belief in God, (2) The Logical Character of Belief in God, (3) The Origin and Development of Belief in God, (4) Belief in God as Cause or Ground of the World, (5) Belief in God as realising Purpose in the World, (6) Belief in God as Father of Spirits. "A theism based on the facts of the cosmos, or universe, is called *cosmic*. To the universe we oppose man; and a theism based on facts of human nature might very properly be called *anthropic*. A theism resting on this double ground I call *anthropocosmic;* and I choose this combination rather than *cosmoanthropic*, to

indicate that, while mine is a man-universe theism, man must not be interpreted in terms of the universe, but the universe in terms of man; namely, of that self-conscious spirituality which makes us selves and persons. Anthropocosmic theism is the doctrine of a Supreme Being, who is ground both of nature and of man, but whose essence is not natural but spiritual."

The Ethical Problem. By Dr. Paul Carus. Chicago: The Open Court Publishing Company, 1890. Pp. xv., 90.

Every system of ethics, whether philosophical or religious, being based upon some conception of the world, the present three lectures "delineate a system of ethics which is based upon a unitary conception of the world". This ethical system, already set forth in the author's *Fundamental Problems* (see Mind xv. 137) is here insisted on against what he considers the too great eclecticism of the new Societies for Ethical Culture. There can be no "ethical" agreement, he thinks, without agreement in theoretical philosophy. The true ethics and philosophy must be based on science. Now as a philosophical system, the scientific ethical doctrine is not new in what it practically teaches. "We want new ethics but no new morality. The morality of the old religions is not wrong." Its defect is only to have based morality on the wrong arguments—*viz.*, supernatural sanctions. When these have lost their force, it is necessary—if morality is to be retained, not as a mere habit, but as rationally directed conduct—that their place should be supplied by others; and for this a theory is required.

A Theory of Conduct. By Archibald Alexander, formerly Professor of Philosophy in Columbia College. New York: Charles Scribner's Sons, 1890. Pp. 111.

This short essay is evidently intended rather as an effort to clear the ground or lay the dust of ethical speculation, than as a substantive or systematic contribution to the subject. Its purpose is "to discuss as concisely as possible some of the more important principles which are the foundation of all moral science," and "in setting aside much that is false, to arrive at conclusions which are beyond doubt". "It is also my purpose to notice briefly the harmony of moral science and revealed religion." The author's position may be described as Hedonism, 'with a difference'. The form of the hedonistic theory which he adopts as the only logical one is the Egoistic. In opposition to what he terms the "hypocrisy" of both altruistic hedonists and intuitionists in their dealing with the motives of conduct, he holds that "it is impossible to persuade men to seek after the happiness of others unless they are convinced that such conduct will secure their own happiness". The distinction of 'quality' in pleasures is also disallowed. While, however, "Egoism is a necessary faculty of the human mind, the history of society shows very plainly that duty, too, is necessary". And "duty is independent of Egoism. For even if it be claimed that all moral conduct is Egoistic, it must be borne in mind that Egoistic conduct is only the conduct of duty, and not a necessary part of the conception of duty as such." This conception of duty or obligation is, as it were, the form of moral life which, while itself primary and necessary, depends for its content upon the teachings of experience. "That I ought to do my duty is a necessary proposition. The content of duty is various and accidental. . . . Like some mysterious oracle, it calls on men to act, but does not tell them what to do." "This I conceive to be the relation subsisting between the *That* and the *What* of morality." But even with the aid of such an

intuitional or transcendental basis, "the logical result of Egoistic hedonism is pessimism". The Egoistic motive is that which corrupts our society. The mass of men, if their motives be selfish, will pursue a course of conduct which will be certain to end in unhappiness. "It seems to me, then, that from a purely scientific point of view, Egoism is the only logical course of conduct, and pessimism is its natural result." The only deliverance from the pessimism in which moral science ends is to be found, according to Mr. Alexander, in the Christian Revelation of the Incarnation and of Personal Immortality. The essay is packed with fresh and suggestive thinking, often expressed in beautiful and striking language. It is only too "concise".

Ethical Religion. By WILLIAM MACKINTIRE SALTER. Boston, U.S.A.: Roberts Brothers, 1889. Pp. iv., 332.

This book, consisting of lectures delivered to the Chicago Society for Ethical Culture, has already appeared in Dutch and German translations, the latter by Prof. Gižycki; see MIND x. 622.

L'Hypnotisme : ses Rapports avec le Droit et la Thérapeutique. La Suggestion mentale. Par ALBERT BONJEAN. Paris: F. Alcan, 1890. Pp. ix., 320.

This is a brightly written book, by a practising Belgian lawyer, who is also a deft hypnotiser and who, as such, has experimented with many human 'subjects,' both for relief of suffering and in the interest of science. If, in spite of his personal efficiency with patients, he speaks as a layman on the therapeutic topic, it is otherwise with his treatment of the legal aspects of hypnotism. Agreeing in his general interpretation of hypnotic phenomena with the Nancy school and with Prof. Delboeuf, he is yet forced, by a varied experience, to maintain against his distinguished fellow-countryman that hypnotic 'subjects' can certainly be made to yield to criminal or other illegal suggestions, and that hence there arises a most serious social danger that must be faced legislatively. The book (after a somewhat overstrained introductory address to a legal luminary in the Belgian world) is not only brightly written but also throughout originally conceived. It records many new and striking facts set in a frame of acute reasoning.

Philosophie de François Bacon. Par CH. ADAM, Professeur-adjoint de Philosophie à la Faculté des Lettres de Dijon, &c. Paris: F. Alcan, 1890. Pp. 437.

A critical exposition of Bacon's philosophy, which recently gained the Bordin prize from the Academy of Moral and Political Science. Exposition and criticism are alike very good and well-informed. The author has, for example, taken up and clearly expressed the right view as to Bacon's relation to the English "philosophy of experience" (see pp. 377-8; also 417-18). There is, as he briefly indicates, no regular order of filiation of English philosophers beginning with Bacon; the real order is quite different. Bacon's "influence" therefore reduces itself in the main to an influence on science. There was not, so far as scientific men were concerned, any very great actual influence of Bacon's ideas; but ideas which summed up the tendency of science at certain periods were found already expressed by Bacon, to whose authority those who represented the tendency could appeal. Bacon's greatest influence was in raising the credit of science in general opinion just at the time when it was beginning to be systematically pursued; that is, in the seventeenth century. In the eighteenth century he was less studied, but more appealed to; the name

of "Baconian" served as a badge to those who represented the prevailing distrust of "hypotheses" and "systems" and devotion to the collection and analysis of facts. In the present century the renewed effort after large hypotheses, and the more disinterested view of the aim of science, has brought on a reaction against Bacon; and scientific men, after praising him beyond measure, have treated him with the utmost contempt. The condemnation is less to be justified than the praise; for Bacon really promoted the cause of science, and belongs to its history more than he does to the history of philosophy.

Les Fondements de la Métaphysique. Par B. Conta. Traduit du roumain par D. Tescanu. Paris: F. Alcan, 1890. Pp. 156.

This volume is principally the translation of an unpublished Roumanian manuscript, left incomplete by the author (who died in 1882) and intended as the introduction to a larger "Essay in Metaphysics". Some smaller fragments are added as an appendix. A former work of the author was noted in Mind ii. 433. Apparently his materialistic doctrine, there set forth, is still adhered to; but there are some interesting passages in which he not only contends for the "intellectual necessity" of a metaphysics, but also indicates more than one possible solution of final metaphysical problems. Any attempt to attain a unitary conception of things, he sees, must contain a subjective, or, as he calls it "artistic" element. And the greater the sphere of positive knowledge becomes, the more also will the field of imagination be enlarged. (See especially pp. 36-9.)

Dr. Antoine Cros. *Le Problème.* Nouvelles Hypothèses sur la Destinée des Etres. Paris: Georges Carré, 1890. Pp. vi., 295.

This book is marked by a certain eccentricity of form, but is not without distinctive philosophical interest. It is essentially an attempt at a monadological metaphysics, which the author does not omit to compare with the doctrine of Leibniz (note xv., pp. 264-270); but it has been independently thought out and has a character of its own. From the theory of an indestructible atom as the "domain of the soul" emerges a doctrine of personal immortality. The life of the soul under earthly conditions of experience is to be regarded as a state in which impressions are accumulated for the future exercise of "creative" power by "imagination," which the soul possessed before and will possess again during an indefinite series of deaths and reincarnations.

Contributo Critico-sperimentale alla Fisiopsichologia della Suggestione. Sui fenomeni di credulità per suggestione non ipnotica nelle persone sane. Per il Prof. Enrico Morselli, Direttore della clinica delle malattie mentali nella R. Università di Genova. Milano: Fratelli Dumolard, 1890. Pp. 39.

A description of phenomena of "credulity" produced in normal and healthy 'subjects' by non-hypnotic "suggestion". The "suggestions" are classified into "sensory" and "motor"; the "sensory suggestions" being grouped under the heads "tactile and muscular," "olfactive," "gustative," "acoustic," "visual," and "organic and visceral" sensations. The exposition is intended to illustrate and support the doctrine of the Nancy school, to which, as the author mentions, he has from the first attached himself. "Suggestion" is to be exhibited as something common to hypnotism and to the most ordinary experiences.

Alessandro Chiappelli. *Sui Frammenti e sulle Dottrine de Melisso di Samo.* Roma: Tipografia della R. Accademia dei Lincei, 1890. Pp. 39.

The author argues against the unfavourable judgment of most modern historians on Melissus. The real position of Melissus was between the pure Eleatic and the Ionian directions of thought. More seriously and acutely than any other Eleatic, he discussed the possibility of a physics; and in the positive part of his doctrine he corrected and formulated with greater rigour the doctrine of Parmenides. The view, which has been put forth, that he affirmed the idealistic doctrine of an immaterial unity of being, cannot, however, be sustained. The Eleatic doctrine was always realistic in content; it was "idealistic" only in the purely "dialectical" procedure of its argumentations.

Prof. Giuseppe Sergi, della R. Università di Roma. *Psicologia per le Scuole.* Con 62 figure intercalate, espressamente disegnate ed incise. Milano: Fr. Dumolard, 1891. Pp. vii., 215.

A very effective exposition, for young learners, of the main topics of psychology, as conceived and treated by the author in his larger works (see Mind vii. 154, x. 474, xiii. 136). The point of view is frankly biological. On Pleasure and Pain and the Emotions, the author has been developing views which he considers new, and to these, here briefly sketched, he promises to give before long a more ample exposition.

Erkenntnisslehre. Von Dr. Al. Schmid, o. ö. Professor an der Universität München. 2 Bände. Freiburg im Breisgau: Herder'sche Verlagsbuchhandlung, 1890. Pp. vii., 498; v., 428.

A systematic and historical work on Theory of Knowledge, viewed as the fundamental philosophic discipline. Volume i. is principally historical and is divided as follows: "Introduction" (pp. 1-61),; Section i. "Philosophical Doubt" (pp. 62-110), ii. "Sensible Knowledge" (pp. 111-242), iii. "Rational Knowledge; First, historical division" (pp. 243-498). Volume ii. contains the "Second, systematic division" of section iii., under the heads of (1) Rational Knowledge generally, (2) General metaphysical Rational Knowledge, (3) Metaphysical Knowledge of Nature, (4) Metaphysical Knowledge of Spirit, (5) Metaphysical Knowledge of God, (6) Logical Knowledge, (7) Ethical Knowledge, (8) Æsthetic Knowledge, (9) Critical Estimation of the Sensualistic and Intellectualistic Theories of Knowledge, (10) Rational Certainty, (11) Kinds of Rational Certainty, (12) Theories of Certainty; together with a brief conclusion on the limits of certainty. The author, as he tells us, stands at the point of view of a "*philosophia perennis*, which, growing with history, remains in essence always the same, and never grows old, because it continually renews its youth and consequently never outlives itself". Theory of Knowledge, from this point of view, begins with "a merely methodic doubt". To this kind of doubt it can submit all things, consciousness included, "without necessarily having to submit all the trans-subjective things that are valid for the common rational or pre-philosophical consciousness to a not merely probationary but serious doubt". Having got beyond "probationary, methodic doubt" to the establishment of a sufficient number of philosophical dogmas or certitudes, it can then mark the "limits of knowledge" and point out the place for theological dogmas and for the apologetic department of theology, to which is assigned the defence of these. The "ground-direction" of the book, the author says, will be sufficiently manifest from

its contents. The execution, in parts, appears not bad ; though this is surprising at i. 28 :—"The doctrine of the Scottish school, of a general reason- and belief-sense as criterion of certitude, was transmitted by James Mill, John Young, Douglas, William Hamilton".

Moralphilosophie. Eine wissenschaftliche Darlegung der sittlichen, einschliesslich der rechtlichen Ordnung. Von Victor Cathrein, S.J. Erster Band : Allgemeine Moralphilosophie. Freiburg im Breisgau. Herder'sche Verlagsbuchhandlung, 1890. Pp. xv., 522.

This is the general part of a text-book of Scholastic Moral Philosophy. The Special Part, containing the application of general principles to particular cases, is to follow soon. The volume now published is very well written, and seems likely to be a standard exposition of the Neo-Scholastic doctrine in ethics. The point of view, as defined by the author, is expressly theistic, but not expressly Catholic or Christian. "We build," he says, "on grounds which every rational man, whether Christian or non-Christian, educated or uneducated, European or Asiatic, must recognise if his thinking be consequent". At the same time, "Moral Philosophy is the best apology of theism, and, with it, of Christianity". "Philosophy is the secure knowledge of things from their ultimate and highest grounds, so far as it is attainable with the natural light of reason. Moral Philosophy is that part of Philosophy which occupies itself with the moral order and strives to comprehend it from its ultimate grounds." Its chief source is "the secure axioms of natural reason". Moral precepts, as the author seeks to show at length in an Appendix (pp. 451-521) are and always have been in their most general outlines the same among all peoples, whether civilised or savage. Revelation, though not to be explicitly appealed to in order to establish philosophic principles, may nevertheless be taken by the moral philosopher as a "finger-post," since there are not two kinds of truth. Thus, it is not considered superfluous to point out that free-will, while it is proved by an immediate dictum of consciousness, is also part of Catholicism, and, as the author maintains, of Christianity (p. 33, note). Moral philosophy must start from positions already established in psychology or "anthropology". Positions necessary for ethics are the doctrine that man consists of soul and body, and the doctrine of free-will—the essential nature of which consists in this, "that the will, under the pre-supposition of all that is requisite for action, can proceed to the act or not". There is an objective, unchangeable standard of good and evil, determinable by reference to "the rational nature of man". The scientific system of moral philosophy, which determines objective ethical principles from the rational nature of man, has been constructed by S. Thomas on the foundation furnished by Aristotle. The ethical system includes in itself the system of law or right ; exactly as the virtue of justice is included among the ethical virtues. The divisions of the present volume are, after a brief Introduction (pp. 1-10):—Bk. i., "Of the Nature of Man, and of Human Actions considered from their physical side" ; bk. ii., "Of the destination of Man" ; bk. iii., "Of the Norm of the Moral Good" ; bk. iv., "Of the kinds and springs of the Moral Good" ; bk. v., "The natural Moral Law" ; bk. vi., "Conscience" ; bk. vii., "Guilt and Merit" ; bk. viii., "The doctrine of Right". The defence of the Scholastic positions against what are regarded as the most influential modern errors, and the counter attack on the views inconsistent with Scholasticism, are as elaborate as the direct exposition.

Zur Geschichte des Erkenntnissproblems. Von Bacon zu Hume. Von EDUARD GRIMM. Leipzig: W. Friedrich, 1890. Pp. xii., 596.

An exposition of the philosophy of Bacon (pp. 3-57), Hobbes (pp. 61-169), Locke (pp. 173-364), Berkeley (pp. 367-434), and Hume (pp. 437-596), with special reference to theory of knowledge. While recognising the independence of Hobbes with regard to Bacon and of Locke with regard to Hobbes, the author still finds that English experiential philosophy within the period considered may be compared to "a drama in five acts, which mounts upwards from Bacon and Hobbes to Locke, and after having performed an internal revolution in Berkeley, reaches its catastrophe in Hume". The exposition is fluent, and many important points made by earlier and later historians of English philosophy are well seized. The result of the whole development, the author thinks, was to show the necessity either of renouncing all secure knowledge, or else of seeking "an entirely new way". He does not say precisely what ought to be regarded as the new way; but he has some remarks at the end on the contrast between two aspects of Hume's philosophy—the negative, backward-looking, and the positive, forward-looking aspect. The problem of surmounting philosophical scepticism, Hume only acknowledged himself for the time unable to solve; he did not regard it as insuperable. And he himself attempted a psychological solution, which is in its way positive, of problems as to the origin of conceptions.

Herbert Spencer's Lehre von dem Unerkennbaren. Von ERNST GROSSE, Privatdocent an der Universität Freiburg. i. B. Leipzig: Veit, 1890. Pp. vi., 119.

An exposition (pp. 1-63) and criticism (pp. 64-119) of Mr. Spencer's theory of knowledge as set forth in *First Principles* and in *The Principles of Psychology*. The exposition is careful and well-written. The criticism is directed in detail against Mr. Spencer's "relativism". What the author aims at putting in its place is "merely a scientific rehabilitation of the view of 'common sense'." More is given, as may be seen, than is promised in the title; the doctrine of the Unknowable—against which, in particular, the author contends that religion as well as science is concerned with the Knowable—being treated simply as part of a general philosophical doctrine.

Herbert Spencer's Erziehungslehre. Eine kritische Untersuchung. Inaugural-Dissertation der philosophischen Fakultät der Universität Jena zur Erlangung der philosophischen Doktorwürde vorgelegt von FRANK M'MURRY. Gütersloh: C. Bertelsmann, 1890. Pp. 82.

It is not stated whether the author of this Inaugural Dissertation for the attainment of the degree of Doctor of Philosophy in the University of Jena has actually received the degree. To have conferred it for a production of this kind would not reflect credit on any University. Professedly it is a "critical investigation" of Mr. Spencer's educational doctrine in relation to his whole system of philosophy. The fact that the author really knows something of Mr. Spencer's works, and can when he likes write an accurate exposition of particular points and even cite relevant objections from other writers, only makes it necessary to speak of him with more plainness. The remarkable—and very unpleasant—feature of his "dissertation" is the constantly recurring, perfectly irrelevant, but to all appearances calculated, appeal to theological prejudice. The appeal is of a kind that it might have been thought had by

this time gone out of fashion even in the polemics of the street. The general spirit in which the author writes may be inferred from the assertion, many times repeated in one form or another, that for Mr. Spencer "man is merely the cleverest beast (*das klüyste Tier*), not a moral being" (p. 48). The length to which he can go in particular misrepresentation becomes visible when he says (p. 7) that in Mr. Spencer's opinion "Religion in the ordinary sense, or belief in God, is pure superstition; Protestantism is a 'Hebrew myth'"; the reference for the last statement being to "*Principles of Psychology*, 3rd edition, 1881, vol. i., p. 466, note". Of the controversial methods here revealed, "we must wish," as the author says of Mr. Spencer's views, "that they may find no further extension; for to the promotion of human welfare they are not adapted". It may be said with perfect truth of such methods that in them "the moral part of man finds generally little recognition".

Received also:—

J. Croll, *The Philosophical Basis of Evolution*, Lond., E. Stanford, pp. viii., 204.

D. Syme, *On the Modification of Organisms*, Melbourne, G. Robertson, Lond., Kegan Paul, Trench, & Co., pp. 164.

J. Donovan, *From Lyre to Muse*, Lond, Kegan Paul, Trench, Trübner, & Co., pp. 209.

G. Jamieson, *A New Psychology*, Edinb., A. Elliott, pp. xv., 206.

E. Hatch, *The Influence of Greek Ideas and Usages upon the Christian Church*, Lond., Williams & Norgate, pp. xxiii., 359.

Wm. Turner, *The Cell-theory, past and present*; and *The Convolutions of the Brain*, Lond., Williams & Norgate, pp. 44, 53.

N. Kerr, *Should Hypnotism have a recognised place in ordinary Therapeutics*, Lond., H. K. Lewis, pp. 16.

W. T. Harris, *Introduction to the Study of Philosophy*, New York, D. Appleton, pp. xii., 287.

C. M. Gayley, F. N. Scott, *A Guide to the Literature of Aesthetics*, Berkeley, Univ. of California, pp. 116.

S. Serguéyeff, *Le Sommeil et le Système nerveux*, Paris, F. Alcan, pp. xxii., 800; xx., 962.

A. Schopenhauer, *Le Monde comme Volonté et comme Représentation* (tr. A. Burdeau), 3 Tomes, Paris, F. Alcan, pp. 438, 325, 460.

P. Ceretti, *Sinossi dell' Enciclopedia Speculativa*, Torino, Union Tip.-Editrice, pp. lv., 222.

P. Ceretti, *Poesie Giovanili*; and *Grullerie Poetiche*, i. Torino, V. Bona, pp. xxii., 132; xv., 310.

S. Rubinstein, *Zur Natur der Bewegungen*, Leip., A. Edelmann, pp. 64.

J. G. Vogt, *Das Wesen der Elektrizität*, &c., i., Leip., E. Wiese, pp. 472.

A. Lehmann, *Die Hypnose*, Leip., O. R. Reisland, viii., 194.

P. du Bois Reymond, *Ueber die Grundlagen der Erkenntniss*, Tübingen, H. Laupp, vii., 130.

T. Ziehen, *Leitfaden der Physiologischen Psychologie*, Jena, G. Fischer, pp. 176.

O. Gaupp, *Die Erkenntnisslehre H. Spencer's*, Berlin, H. Schumacher, pp. 66.

Notice will follow.

VIII.—FOREIGN PERIODICALS.

The Journal of Speculative Philosophy.—Vol. xxii., Nos. 1, 2. P. Chubb—Thomas Hill Green's Philosophical and Religious Teaching. [An outline of Green's metaphysics, with some remarks on his attitude towards Christianity.] J. A. Scartazzini—The Congruence of Sins and Punishments in Dante's Inferno (tr.). W. T. Harris—Plato's Dialectic and Doctrine of Ideas. A. Bullinger—Hegel's Doctrine of Contradiction (tr.). S. W. Dyde—Dr. Martineau's Idio-Psychological Ethics. [An expository and critical article having for its indirect aim "to show that the difference between Utilitarian ethics on the one hand and on the other hand the ethics of Intuition, as represented by Dr. Martineau's "Idio-Psychological Ethics," is not really radical, and that a possible reconciliation between these two conflicting theories is indicated now and then by Dr. Martineau himself".] Leibniz—Critique of Locke (tr.). P. Spence—The Spectrum-Spread of our Sensations. [Contends that the appearance of sensations as spatially ordered is fatal to the idealistic theory of the external world.] E. M. Mitchell—The Platonic Dialectic.

The American Journal of Psychology.—Vol. iii. No. 3. H. H. Donaldson—Anatomical Observation on the Brain and several Sense-organs of the blind deaf-mute Laura Dewey Bridgman, i. [First part of a very careful description (with illustrations) of the famous Laura's brain. The author has "applied a large number of tests to the brain, to determine, if possible, whether her peculiar mental existence, which was the result of her defective sense-organs, has left any trace on her brain, or whether such anomalies as may be observed are sufficiently explained when considered as the direct consequences of the initial defect alone". The final results, as bearing on "the inter-relation of brain-structure and intelligence," remain to be given: they should prove of no common interest.] C. F. Hodge—A Sketch of the History of Reflex Action, ii. [Two sections in continuation: the first, occupied with Bell's Law, as supported or developed by Magendie, J. Müller, and others; the second, with the physical (*versus* psychic) theory of reflex action, worked out differently by Marshall Hall, Pflüger, Lotze, &c.] J. Le Conte—On a curious Visual Phenomenon. [A short description and explanation, by this unwearied optical observer, of a peculiar visual image which he can produce on first waking from sleep by sudden and violent turning of the eyes to right or left, with closed lids. The image is of "two brilliant circles of radiating lines, surrounding each a blank space," and is held, apparently with good reason, by the observer to represent the blind spots of the two eyes in the only way in which they admit of being *directly* apprehended.] W. Noyes—A Counting-attachment for the Pendulum-chronoscope. Psychological Literature (Nervous System, Experimental, Criminology, Psychiatry, Miscellaneous). Notes.

Revue Philosophique.—An. xv., No. 10. G. Tarde—Le délit politique. [On the generalisations of Lombroso especially with reference to "political crime". Many interesting remarks are made by the way; but the central point is that Lombroso neglects social as compared with physical influences.] A. Belot—Une nouvelle theorie de la liberté. [On M. Bergson's recent *Essai sur les Données immédiates de la Conscience.*] Ch. Féré—Note sur la physiologie de l'attention. [Voluntary attention, or attention excited by representations, and reflex attention, or attention

of external origin, have the same physiological basis, *viz.*, tension of the muscular system. The parallelism of the two kinds of attention is shown by experiments. Sensory excitations of any kind augment the rapidity and energy of muscular reaction; voluntary attention has the same effect. The ordinary effect of voluntary attention, *viz.*, rapidity and energy of response, can be produced by a purely mechanical tension of muscles not immediately brought into action. The inverse effect is also produced; moderate mental activity exaggerates the energy of movements not immediately connected with it. While general tension is the necessary support of local tension, two local activities cannot be at the maximum of intensity at the same time; for the general tension that is used as its support by one of them is withdrawn from the other. General relaxation of the muscles, as has been shown experimentally, tends to suppress attention and psychical activity. "Repose" is of course not the same thing as "voluntary immobility," which involves a balance of muscular efforts, and may be taken as identical with the attitude of attention. Previous tension of the muscles (produced otherwise than voluntarily) favours not only energy and rapidity of movement, but also its precision. Here again the effect of voluntary attention is the same.] Notes et Discussions (J. Andrade—Les bases expérimentales de la geométrie. J.-J. Gourd—Sur le principe de la causalité). Analyses, &c. Rev. des Périod. No. 11. J.-P. Durand—Qu'est-ce que la physiologie générale? [A brief argument for the author's view that every animal and every plant is composed of a number of distinct "elements," each of which is the animal or plant in miniature. The human organism, for example, is "an assemblage of elementary organisms, of which each possesses all the fundamental attributes manifested by the whole". It is therefore "the seat of a colony of psychical individualities, absolutely distinct but all subordinated to a supreme chief, the central Ego, which is for them a *primus inter pares*".] E. de Hartmann—L'axiologie et ses divisions. [A distinction is drawn between the "eudæmonological" branch of "axiology"—or the doctrine of the value of ends—and other branches, in which ends are considered, not as involving more or less pleasure, but as having a "teleological-evolutionistic" significance. This distinction furnishes the ground for a defence of the author's combination of "eudæmonological pessimism" with "teleologico-evolutionistic optimism".] F. Paulhan — Le nouveau mysticisme. [Discusses the spirit of the present age, considered as in various ways a reaction from the spirit of the immediately preceding age. The reaction against naturalism and pessimism is first considered; then the influence of popular versions of "Darwinism" in promoting pessimism (which, however, had sprung up independently). Exclusive devotion to the "historical method" is viewed as a symptom of intellectual anarchy. The appeal of hypnotic experiments to the love of the marvellous is discussed. The "new mysticism," which expresses itself particularly in theosophical doctrines, is found to be also manifested in genuine philosophy. Illustrations of the mystical tendency are found also in novels and literary criticism; and, on the practical side, in socialism. The new age, while it is on one side a revival of beliefs and aspirations that had been temporarily obscured, at the same time desires a synthesis of these with the scientific aims of the immediate past. Mysticism may have its dangers; but, so long as the scientific spirit persists, all is well.] P. Regnaud—L'origine des suffixes et le mécanisme de la dérivation dans les langues indo-européennes. Rev. Gén. (P. Tannery—L'histoire du concept de matière). Analyses, &c. (J. Drummond, *Philo-Judæus*, &c.). Rev. des

Périod. No. 12. E. de Roberty—Les antinomies et les modes de l'inconnaissable dans la philosophie évolutionniste. [Concludes that a "categorical" monism such as that of Mr. Spencer, falls into the error of "taking the false negation of identity or of pure knowledge, the unknowable, for something really distinct, really separate from the knowable". A more rational agnosticism is that of thinkers like Comte, who profess a "less categorical, less affirmative" monism.] A. Binet--Perceptions d'enfants. [Further experiments on the mental powers of the two children that were the subject of M. Binet's article in *Rev. Phil.* for July (MIND xv. 584). Perceptions of colour were first experimented with. Yellow and green were often confounded by the younger child ($2\frac{1}{2}$ to 3 years old). "Method of recognition" being substituted, on alternate days, for Preyer's "method of appellation," it was found that (as Preyer had conjectured) the confusion is between names and not colours. The child has always more difficulty in finding the name of a given colour than the colour corresponding to a given name. The colour oftenest named is red (in Preyer's experiments it was yellow). Interpretation of "drawings" (pictures, photographs, &c.) being tested, it was found that anything which has been seen and is represented as a whole is named correctly, but that there is no recognition of separately represented parts of an object when they have not been first seen in separation. The eldest of the children ($4\frac{1}{2}$ to 5 years old) cannot interpret with certainty any pictured signs of emotional states but laughter and tears. At 3, dreams are not distinguished from other recollections; at $4\frac{1}{2}$ they are distinguished, though not without indecision at some points. The "feeling of the Ego" takes some time to form. Use of the third person for the second and the first is shown by experience to be not wholly a result of imitation. The first person is the last to be used correctly. "At three years and two months exactly the little girl for the first time makes use of the word I." When asked for the definition of an external thing ('What is so-and-so?') both children reply, when it is an object commonly used, by saying what it is used for, and in the case of other objects usually by some analogous answer.] Rev. Gén. (M. Vernes—Histoire et philosophie religieuses). Notes et Discussions (G. Lechalas —Les bases expérimentales de la géométrie. A. Lalande—Sur la causalité). Analyses, &c. Rev. des Périod.

RIVISTA ITALIANA DI FILOSOFIA.—An. v. 2, No. 2. L. Pietrobono—Della percezione del corpo umano. [An argument for the doctrine of a primitive "perception of the body" as held by Rosmini. "Perception" is necessarily bound up with the "feeling of the body," which is generally recognised by modern psychologists. The original "perception" is not at first differentiated into special perceptions, but gradually becomes so.] P. Ceretti—Idee pedagogiche. [A posthumous essay, with brief introduction by Prof. Pasquale d'Ercole.] V. Benini—Dell' attenzione. [Written with reference to Prof. Ribot's *Psychologie de l'Attention*.] S. Ferrari—La scuola e la filosofia pitagoriche (v.). [On the relations of Pythagoreanism with posterior Greek schools and with modern philosophy. "If the worth of a system is to be measured by the truth which it has introduced into science and by the number of germs that have survived and been transplanted into other systems, then it must be recognised that time and history establish the importance and greatness of the Pythagorean philosophy."] Bibliografia, &c. No. 3. L. Credaro —Il presente della storia della filosofia. [On the desirability of treating the history of philosophy in relation to natural and social circumstances, and not in isolation from the history of the special sciences, of religion,

&c. At present the periods that most need study are the pre-Socratic and post-Aristotelian periods.] A. Piazzi—La pedagogia di Jacopo Sadoleto. L. Pietrobono—Della percezione del corpo umano (ii.). [On theories of the genesis of spatial representations. Space can best be derived psychologically from "organic perception" or "the feeling of the body".] Bibliografia, &c.

Rivista di Filosofia Scientifica.—Vol. ix , Nos. 3-6. [These Nos. having, through miscarriage or other accident, failed to come to hand at the proper time, it is not possible now to do more than give their mere contents.] No. 3. B. Labanca—Difficoltà antiche e nuove degli studi religiosi in Italia. G. Marchesini—La rappresentazione nell' instinto. Riv. Anal. Rasseg. Bibl., &c. No. 4. G. Fano—Di alcuni fondamenti fisiologici del pensiero. G. Cesca—La storia della filosofia. A. Capelli—La matematica nella sintesi delle scienze. Riv. Anal. (A. R. Wallace, *Darwinism*), &c. No. 5. F. Pietropaolo—Scienza e religione. M. Pilo—L'analisi estetica. F. S. Monticelli—Il parassitismo animale. Note Critiche (F. de Sarlo—L'idea dell' anima, e la psicologia), &c. No. 6. A. Agrestini —L'unità della materia. G. Dandolo—La dottrina della memoria nel sensualismo e materialismo francese, &c.

Philosophische Monatshefte.—Bd. xxvi., Heft 9,10. J. Zahlfleisch—Das natürliche Denken auf Grund des Analogieschlusses. ["A contribution to the reform of logic."] A. Baur—Eduard Zeller als Religionsphilosoph. ["A contribution to the history and criticism of modern philosophy of religion." The development of Zeller's view of religion is brought into connexion with the development of his general philosophical view; a "first period," under Hegelian influence, being distinguished from a "second period," marked by a return to Kant. In the first period religion is not appreciated on all its sides, but merely from the intellectual point of view, as containing the symbolic expression of a philosophical doctrine. In the second period, consistently with the spirit of the critical philosophy, it is viewed more as an independent phenomenon not to be exhausted by the exclusively intellectual view.] Recension. Litteraturbericht, &c. (W. Cook, *The Ethics of Bishop Butler and Immanuel Kant*, &c.).

Vierteljahrsschrift für wissenschaftliche Philosophie.—Bd. xiv., Heft 3. C. v. Ehrenfels—Ueber "Gestaltqualitäten". [Discussion of some points in E. Mach's *Beiträge zur Analyse der Empfindungen* (1886).] H. Höffding—Ueber Wiederkennen, Association und psychische Activität (Schluss). [The special subject of the present article is "psychical activity". This, interpreted as "attention" or "will," the author is disposed to look upon as essential to all mental life. From "formal will," in which the essence of all consciousness consists, "real will" is to be distinguished. Attention announces itself in consciousness by "sensations of movement"—external or internal according as sense-stimulations or representations are attended to. "Activity" is not a quality attached to simple states of consciousness; for self-perception does not tell us where activity ends and passivity begins; in self-perception we discover the results of activity, not activity itself. Everywhere present in higher or lower degree, psychical activity is perhaps indefinable.] B. Kerry—Ueber Anschauung und ihre psychische Verarbeitung (vii.). J. Petzoldt—Maxima, Minima und Oekonomie (ii.). Anzeige. Selbstanzeigen, &c.

Archiv für Geschichte der Philosophie.—Bd. iv., Heft 1. P. Tannery—Une opinion faussement attribuée à Pythagore. [The common

source of the attribution to Pythagoras by Pliny and Censorinus (1) of an evaluation of the moon's distance in stadia, and (2) of the application of his doctrine of the harmony of the spheres to determining the distances of the planets, is Varro, who himself probably depended on Greek sources of very recent date.] M. Offner—Zur Beurteilung des Melissus. [Melissus was not really guilty of the argument attributed to him by modern historians, that because the whole is unlimited in time it must be infinite in extent. The argument is one that it is not likely he would have used; there is no trace of it in the fragments; the authority for its ascription is insufficient; finally, it can be shown that the misunderstanding probably originated *after* Aristotle and *before* Themistius.] A. Döring—Die Disposition von Xenophons Memorabilien als Hülfsmittel positiver Kritik. [A defence of the genuineness and organic character of the *Memorabilia* against some recent critics.] Th. Achelis—Das Zweckprincip in der modernen Philosophie. [Cites authorities, during the present century, against the rejection of final causes, especially in the sciences of organic life.] J. P. N. Land—Arnold Geulincx und die Gesammtausgabe seiner Werke. [See p. 160, below.] Jahresbericht (H. Diels, E. Zeller, P. Wendland, B. Erdmann). Neueste Erscheinungen.

Philosophisches Jahrbuch.—Bd. iii., Heft 4. Hayd—Vereinbarkeit oder Unvereinbarkeit unbeschränkter Freiheit der wissenschaftlichen Forschung mit einem dogmatisch bestimmten Glaubensbekenntniss (Schluss). [No sharp line can be drawn between knowledge and belief. Some conception is a condition of belief as of knowledge. Reason must be able to conceive that which has to be believed as at least "possible," and not only as possible but as "reasonable," that is to say, fitting into a rational system of philosophy and supplying the defects of knowledge. The objects of supernatural faith also are not exempt from the laws of formation of concepts; for they can be continually better conceived and understood.] E. Kadeřávek—Ueber die Einführung der christlichen oder aristotelisch-thomistischen Philosophie an den philosophischen Facultäten (Schluss). F. X. Pfeifer—Analogien zwischen Naturerkenntniss und Gotteserkenntniss, den Beweisen für Gottes Dasein und naturwissenschaftlicher Beweisführung, mit Bezugnahme auf Kant's Kritik der Gottesbeweise (i.). [Chiefly an argument against Kant s criticism of the "cosmological" proofs of the existence of God. According to Kant, the inference of causes is only valid within the world. But scientific men proceed according to the principle that in all cases where a fact is not explicable from the causes within a determinate sphere, a cause lying outside that sphere must be assumed. In the proof of the existence of God from the law of causation, the determinate sphere that does not contain within itself causes sufficient to explain the given facts is the whole world; consequently the principle requires a supramundane cause.] M. Sierp—Pascal's Stellung zum Skepticismus (Schluss). Recensionen und Referate (F. E. Abbot, *The Way out of Agnosticism*, &c.). Philosophischer Sprechsaal (N. Kaufmann—Erwiderung auf die Kritik der thomistischen Erkenntnisslehre). Zeitschriftenschau. Miscellen und Nachrichten.

Zeitschrift fur Psychologie u. Physiologie der Sinnesorgane.—Bd. i., Heft 4, 5. J. v. Kries—Ueber das Erkennen der Schallrichtung. [An account of some new experiments on the perception of sound-direction, devised with reference to the recent rehabilitation by Preyer, and also (in different and independent fashion) by Münsterberg, of the earlier view that it is effected by means, or at least with help, of the semicircular canals. The author puts forward his experiments with a view

not so much to any definitive result as to showing how variable the conditions of the perception are.] Th. Lipps—Zur Psychologie der Causalität. [A very elaborate attempt (pp. 48) by the author of *Die Grundthatsachen des Seelenlebens* to reduce Causality to Association, and the Law of Causation to the Law of Association.] K. L. Schaefer—Zur interaurealen Localisation dioticher Wahrnehmungen. [Experimental examination of a special question arising out of the author's paper on "Perception and Localisation of Fluctuations and Difference-tones" in the previous No.] R. Wahle—Zur Psychologie der Frage. [Analysis by the author of *Gehirn u. Bewusstsein* (See MIND x. 151), of the complex mental attitude assumed in the different forms of interrogatory expectation.] H. Ebbinghaus—Ueber negative Empfindungswerte, i. [First half of a discussion joining on to Fechner's posthumous letters on the subject given in Nos. 1, 2, and pointed with reference to the later psychophysical work of Delboeuf, Münsterberg and others.] Versammlungen. [Accounts of proceedings in the ophthalmic and aural sections of the recent Medical Congress at Berlin.] Litteraturbericht. Bibliographie der psychophysiologischen Litteratur des Jahres 1889, [A first attempt at an exhaustive catalogue of a whole year's "psychophysiological" literature, disposed into 14 sections and covering 55 pp.]

VOPROSY PHILOSOPHII I PSICOLOGII (PROBLEMS OF PHILOSOPHY AND PSYCHOLOGY).—Vol. i., Nos. 2-4. [Professor N. Grot, of Moscow, editor of this quarterly, of which No. 1 was noticed at length in MIND xv. 154, has kindly given the following English rendering of the main contents of the succeeding Nos.] E. Radlof—On the relations between Voltaire and Rousseau (i.). N. Twanzof—The relation of philosophy and science. L. Lopatin—The ethical problem in contemporary philosophy. N. Zwieref—On the freedom of will. N. Grot—What is metaphysics? N. Sziszkin—Psychophysics from the point of view of a mechanical theory. N. Owsianriko Kulikowsky—Essays on the history of mind. A. Tokarsky—On the Hypnotical Congress at Paris. N. Bazenof—The Second Congress of Anthropological Criminology Critical Notices. Bibliography. No. 3: O. Gerasimof—An essay on the psychical evolution of Lermontof. W. Lutoslawski—On the importance and the aims of the history of philosophy. L. Lopatin—Criticism of the empirical principles of ethics. T. Twanzof—On the artistic theories of S. A. Usof. Sziszkin—Psychophysics from the point of view of mechanical theory. S. Trubezkoy—On the nature of human consciousness. W. Rosanof—On the chief currents of Russian philosophy. A. Kozlof—An essay on the life and philosophy of Leibniz. Critical Notices. (Howard Collins, *An Epitome of the Synthetic Philosophy*, &c.). Bibliography. No. 4: E. Trubezkoy—The political ideal of Plato and Aristotle and their historical importance. E. Radlof—On the relations between Voltaire and Rousseau (ii.). L. Lopatin—The ethics of Kant. A. Tokarsky—On the pedagogical importance of hypnotism. N. Karejew—On the freedom of will from the point of view of historical evolution. N. Grot—On the more important aims of psychology. N. Lange—On the elements of will. W. W. Rosanof—On the struggle with Western Europe. P. E. Astafief—On the ethics of Count L. N. Tolstoi and his critics. Critical Notices (J. Venn, *The Principles of Empirical or Inductive Logic*, &c.). Appendix (Kolubowsky—Materials for a history of Russian philosophy. The Society of Psychical Research at Moscow).

IX.—NOTES.

REPORT OF THE INTERNATIONAL CONGRESS OF PHYSIOLOGICAL PSYCHOLOGY.[1]

The official Report of the International Congress of Physiological Psychology, held at Paris in 1889 (and next to be held at London in 1892) having now appeared, it becomes possible to supplement Prof. W. James's account given at the time (MIND xiv. 614) by further details. The division of work amongst the Sections, and the discussions in their general features, have been already described. Referring for this to Prof. James's account, we may now draw attention to the more definite among the proposals or conclusions, not already remarked on, that are embodied in the fuller report.

Prof. Charles Richet brought forward the question of "the terminology of Hypnotism". The propositions accepted were that the term "animal magnetism" should be reserved for a science that may explain the phenomena otherwise than by "suggestion," and "hypnotism" for the explanation of them by "suggestion, auto-suggestion, and analogous reactions of the 'subject' upon himself". Practically, in the sessions of the Congress, the name of "hypnotism" was applied to all the phenomena, theories apart. As to the kind of 'subjects' susceptible of being hypnotised and the cause of the hypnotic state, M. Bernheim, representing the Nancy school, contended that nearly all persons are susceptible, that the phenomena indicate nothing morbid, and that they are wholly due to the psychical influences generally called "suggestion"; while M. Babinski, expounding the views of the Salpêtrière school, maintained that although susceptibility to hypnotism may exist in germ in all persons, yet, for the tendency to realise itself, some pathological modification must be at least "imminent," that hypnotism in its most perfect form must be regarded as a pathological state, and that, while "suggestion" is a true cause, it is not the only source of hypnotic phenomena, the most important source being "peripheral excitations". By Prof. Janet "distraction" is regarded as a predisposing condition; Prof. Delboeuf ascribes the same function to "attention". The question of hypnotism in relation to "double personality," &c., was discussed by Herr Dessoir, who would define the hypnotic state as a "preponderance of the secondary (*i.e.*, lower or "automatic") Ego produced artificially". M. Danilewsky described some successful attempts to hypnotise animals. The essential thing is to place and keep them in an abnormal position. Voluntary movements are then paralysed; the animal feels itself powerless, and becomes (till reaction) a passive instrument in the hands of the operator.

A point on which almost as much difference of opinion manifested itself as on hypnotism is the question of "Attention". In Prof. Ribot's monograph it is viewed as determined by "affective states". M. Marillier, in opposition to this view, would define it as a "state of relative mono-ideism," or very great preponderance in intensity of a single idea ("absolute mono-ideism" being unconsciousness). Prof. Richet would distinguish active, voluntary attention from mere passive attention to "fixed ideas," &c. Prof. Delboeuf would call "passive attention," which is involuntary, "obsession," and would limit the term

[1] *Congrès International de Psychologie Physiologique.* Première Session. Paris, 1890. Compte rendu présenté par la Société de Psychologie Physiologique de Paris. Paris: Bureau des Revues, 1890. Pp. 159.

"attention" to states that include a voluntary element. M. Espinas insisted on the importance of the element of muscular feeling in states of active attention. Against M. Marillier's view that in the state itself "intensity" is everything, though the intensity of an idea may depend on various causes, he pointed out that great intensity often prevents attention. A medium intensity is best; but this must be accompanied by "represented motor phenomena," on which chiefly attention depends. One determinant of attention is "curiosity"—which may be noticed in animals. M. Marillier's reply was that it is when we are *trying* to pay attention that muscular effort is present; when the state of attention is established, the effort has disappeared.

Reporting on Psychological Heredity, Mr. Galton remarked that the most important question now is whether acquired habits are inherited. Experiments, as he showed, must be on animals; otherwise the social factor could hardly be eliminated. Some methods of experiment on oviparous animals were proposed. As regards human heredity, he remarked, the only point on which he had something new to suggest was "the necessity of limiting observation to the three degrees or groups: *filial*, *paternal*, and *maternal*, and of bringing special attention to bear on the cases in which the members (brothers and sisters) of those groups are numerous".

Two sets of experiments on animals (in addition to those connected with hypnotism) were described. Prof. Richet described a case of "psychical blindness" produced in a dog by removal of "the grey envelope of the occipital convolutions". After the operation, the animal still sees things perfectly as obstacles, but no longer as prey. Prof. Herzen, having referred to the observed results of extirpation of the excitable regions of the cerebral cortex in newly born animals, went on to ask whether, as is ordinarily supposed, recovery from all effects of the operation can be due to the taking up of the function of the extirpated centre by the corresponding centre in the opposite hemisphere. This, he concludes, can hardly be so; for there is also complete recovery of function after subsequent extirpation of the corresponding opposite region. Rather, he would assume provisionally a "subaltern centre," which, already there, develops itself further in the absence of the superior centre. "The more considerable development of that centre would produce a greater development in the corresponding centre of the opposite side; so that the superior centre, of the other side, becomes subaltern and its extirpation produces no effect."

Differences of opinion were not wanting on questions of principle as well as detail; as will be readily understood when it is mentioned that Prof. Grote (of Moscow) argued at some length that an attempt should be made to fix the metaphysical basis of researches in physiological psychology, and himself propounded a theory of spiritualistic dualism; and that M. Alliot asked why the identity of the nervous and electric "fluids" should not be admitted as a working hypothesis to explain "suggestion."

For the future, the name, "Congress of *Experimental* Psychology" was adopted in preference to "Congress of Physiological Psychology". Congress of "Psychology," simply, was proposed; and this would seem not inappropriate to the varied lines of research indicated by Prof. Ribot in his opening address to the Congress: "Animal psychology, linguistic, history of words, become our guides in a region where the aid of physiology almost completely fails us". This was said in reference to the question of "abstract or general ideas"; and allusion was made to other questions of the kind.

Dr. M'Cosh sends the following on "The Office of Induction in Fundamental Philosophy," not without reference to Mr. Carveth Read's review of his *First and Fundamental Truths* in MIND xv. 100 :—

"I have had great difficulty in getting a hearing for one point in my philosophic views. In the discovery of *a priori* truth I allot an important function to inductive observation. This seems to identify me with the empiricists, from whom I entirely separate myself. I hold that there is no induction in the spontaneous exercise of intuition; it sees the object at once. But if we, as metaphysicians, express the law in a general form or law, we need to proceed by a careful observation, the facts being given us by self-consciousness. We have to inquire what is the precise *a priori* law, say of causation, as it manifests itself. If we neglect to do this, there is a great risk of presenting the principle in a mutilated, which is, so far, an erroneous form. The vagaries of metaphysicians commonly spring from an imperfect induction. But in calling in induction we do not give it an authoritative or guaranteeing office. Induction merely lets us know what the law in the mind is; it does not give it its imperativeness. It needs anxious inspection to find what the law of causation is, but the law operates whether we observe it or not. This distinction is easily understood by those disposed to give their attention. It saves me from the inconsistency and the imbecility with which I have been charged, in a recent criticism. It gives to reason and to observation each its proper place in the construction of fundamental philosophy. It may be made the means of reconciling the Scotch and German philosophies."

The last quarter of 1889 has seen the first appearance of not less than three new quarterly periodicals, in English, dealing in different ways with philosophical subjects: (1) *The Critical Review of Theological and Philosophical Literature;* (2) *The International Journal of Ethics;* (3) *The Monist.*

(1) *The Critical Review* hails from Edinburgh (T. & T. Clark), and is edited by the Rev. Prof. S. D. F. Salmond. It is designed to furnish a critical survey of current literature in Theology, with notice also of philosophical and other writings so far as related to theological questions. Among over twenty books reviewed at greater or less length in No. 1, three or four are philosophical; chief of these, the recent translation of *Erdmann*, taken in hand by Dr. J. H. Stirling.

(2) *The International Journal of Ethics* is published concurrently in London (T. Fisher Unwin) and in Philadelphia, with Philadelphia as headquarters. It is managed by an Editorial Committee, consisting of three Americans (Dr. F. Adler, Prof. J. Royce, and Dr. S. Coit, now settled in London), two Englishmen (Mr. J. S. Mackenzie and Mr. J. H. Muirhead), and two continental professors (G. v. Giżycki of Berlin and F. Jodl of Prague); and will be "devoted to the Advancement of Ethical Knowledge and Practice". Among the varied contents of No. 1 may be specially noted: "The Morality of Strife," by Prof. H. Sidgwick; "The Law of Relativity in Ethics," by Prof. H. Höffding of Copenhagen; an examination of Abbot's *Way out of Agnosticism*, by Prof. J. Royce; and a series of short book-notices by Prof. v. Giżycki (in one of which, on the fourth edition of *The Methods of Ethics*, he declares that he must repeat "the very serious reproach," three times before made, "that, *without sufficient reason*, Prof. Sidgwick affirms 'a fundamental contradiction in ethics,' abandons the independence of morality, and opens the door to moral scepticism").

(3) *The Monist*, from Chicago (Open Court Publishing Co.), is to be concerned with "Philosophy, Religion, Science and Sociology," and will "continue a certain portion of the work hitherto done by *The Open Court*"

(weekly). It is called *The Monist*, apparently, because its promoters believe that "the thinkers of mankind, whatever may be their philosophical or religious views, are working, everyone in his own province, at one and the same great problem, which is a unitary conception of the world—free from contradictions, and based upon the facts of life". The words apply to Philosophy in general hardly less than to Monism in particular. Accordingly, the pages of the new quarterly are to be "open to every competent exposition of the results of philosophical inquiry,"—and not of philosophical only. In No. 1 about half of the articles are over the border. The others are: "The Analysis of Sensations—Antimetaphysical," by Prof. E. Mach; "The Origin of Mind," by Dr. P. Carus; "The Magic Mirror" (study of various forms of clairvoyance), by M. Dessoir: and "Höffding on the Relation of the Mind to the Body," by W. M. Salter.

Prof. J. P. N. Land of Leyden, who (with J. van Vloten) edited in 1882-3, for the Spinoza Memorial Committee, the stately two volumes of *Opera*, is now, after long preparation, engaged on the task of bringing out, in like form, a collected edition (in 3 vols.) of the works of Arnold Geulincx. A balance left over from the fund collected for the Spinoza Memorial (statue as well as edition of works) has been devoted by the committee to this purpose; and the money could in no way be so appropriately bestowed as in promoting this long-neglected service to the fame of Spinoza's great Flemish contemporary, who, like himself, came early to the end of a life not too fortunate. Prof. Land has written in the last No. of the *Archiv f. Gesch. d. Philosophie* (see above, p. 155) an article on Geulincx and the proposed edition of his works. It contains so much information about a thinker who is far too little known in this country, that permission has been sought and obtained to have it translated for the next No. of MIND.

THE ARISTOTELIAN SOCIETY FOR THE SYSTEMATIC STUDY OF PHILOSOPHY (22 Albemarle Street, W.). The Twelfth Session began on Monday, Nov. 3, when the President gave an Address on "The Laws of Association". Subsequent meetings—Nov. 17, Mr. R. B. Haldane on "The Categories of Scientific Method"; Dec. 1, Mr. B. Bosanquet V.-P. "On the main outlines of Hellenic Theory concerning the Beautiful". Both papers were followed by discussion.

CORRECTIONS. 1 The Rev. J. M. Robertson of St. Ninian's, Stirling, has noted, in the most important of the newly discovered Letters of Hobbes reprinted in MIND xv. 440-7, an error overlooked both here and by the original transcriber, Dr. F. Tönnies. The word "otium" in the last line but one of p. 445 gives no sense: Mr. Robertson suggests "etiam" instead, with obvious propriety, and the more if a comma is inserted after the following word "odiose".

2 In the first paragraph of Mrs. Ladd Franklin's review of Miss Jones's *Elements of Logic* in MIND No. 60, p. 559, it was, by some accident, wrongly stated that so large a relative number as "thirty-six" pages were given to the single discussion of "Existence and a Limited Universe". No more than 16 pp. are given to what Miss Jones calls 'Predication and Existence,' and the subject of "Existence and a Limited Universe" is not treated by her outside of these. On the other hand, the "four" pages which the reviewer said were all that Miss Jones gave "to the whole subject of Induction" should be doubled to about 8 pp., when her various other references to the subject are reckoned, beyond that four-page 'Note on the Ground of Induction,' which Mrs. Franklin appears to have alone regarded.

No. 62.] [April, 1891.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—FREE-WILL: AN ANALYSIS.

By Shadworth H. Hodgson.

The question concerning the nature and reality of Free-will is one which will probably long retain its interest, notwithstanding that many look upon it rather as a speculative plaything, lending itself to the display of idle ingenuity, than as a problem possessing practical importance, due to its direct bearing on the theory of Conduct. The latter view, however, must of necessity be taken by those who regard the ideas of Conscience, Duty, and Moral Responsibility, as the essential and fundamental tenets of their ethical system, while moralists of the opposite type, who make the attainment of Happiness their ruling principle, will naturally lean towards the former. In their case the reason is evident. The action known by the name of choosing is confessedly pre-supposed in all moral conduct. Happiness, the End aimed at by it, furnishes, in their view, the criteria of all right conduct. To instruct the judgment, so as to know true happiness from false, the greater from the less, the real from the apparent, is for them the cardinal problem of Ethic. Hence they have no inducement to spend time in analysing that part or element in acts of choice which is alike in all, when the reality of those acts, as distinguished from their analysis, is never called in question.

The case stands very differently with moralists of the opposite type. For them the criterion of right action lies, not in the End to be attained by action, as something to be enjoyed, but in action itself, considered as the operation or functioning of an agent, from whose nature it springs and whose nature it modifies, leaving indelible traces in his character. The acts of choosing, in their common and essential nature, are here the really important matter, not their issue in happiness or the reverse. The agent's own self-consciousness is the judge of whether they are right or wrong, performances or infractions of duty. He stands before the tribunal of his own self-consciousness, and in this, primarily at least, his sense of moral responsiblity consists. It is evident that, for moralists of this type, the analysis of acts of choice, simply as such, is all-important. The reality of duty, of the judgments of conscience, and of moral responsibility, depends upon the reality of freedom in acts of choosing. If that freedom is unreal, their whole ethical theory is unsound. Hence, so long as there are moralists of this type, so long will the question of Free-will retain its interest. This must serve as my apology for venturing once more to discuss the well-worn theme.

Placing myself, then, at the point of view of the Ethic of Duty, as opposed to the Ethic of Happiness, I propose to take account of that theory of volition which denies its freedom, and which, if tenable, would rob the words *duty*, *conscience*, *right*, and *wrong*, of all distinctive meaning, and at the same time make of Ethic a positive, instead of a practical and philosophical science. I mean the theory which maintains, that immanent volitions are really not free but compelled actions, or which, in other words, denies the fact of Free-will. The question relates, not to overt acts, but to immanent volitions or acts of choice; and it is usually admitted, as indeed it would be impossible to deny, that in choosing we have the feeling known as the *sense of freedom*, a feeling *as if* we were free to choose. What is denied is, that this feeling affords any evidence for freedom as a reality; and this with perfect justice, until both the meaning and the fact of freedom have been ascertained by analysis, independently of that feeling which we call the *sense* of it.

The real nature of volitional action is thus brought into question. And it is evident that, if we have indeed no power to choose otherwise than we choose actually, in any single instance of immanent volition, it is of little practical consequence what names we give to the different parts of the mechanism of choosing, or how we describe the rules by

which we seem to strive to choose, as we call it, aright. Without real freedom of choice there could be no real moral responsibility, and the sense of it, if it were still felt, would have, like the sense of freedom, to be classed as an illusion. The question, then, is one of the deepest significance for Ethic. In fact we might, in the Ethic of duty, consider the whole ethical domain as divisible into two main portions, the first being that of the nature of volition considered in respect of its freedom, the second that of the nature of right volition, in case, but only in case, the enquiry under the first head should issue in favour of Free-will. The question of Free-will and that of Conscience are together exhaustive of ethical phenomena.

I propose, then, once more to consider the ethically prior question of Free-will, and to give a brief, though I hope also a sound and sufficient, solution of the difficulties with which it has been invested. And in the first place it is clear, that freedom of action has a definite meaning as applied to the overt acts, and bodily movements of persons in everyday life; and also that there are such actions and movements, the freedom of which is a reality. We say, for instance, that a man is free to act and move, when his limbs are unfettered, and his motions unimpeded by external hindrances; or as Hobbes puts it, "Liberty is the absence of all the impediments to action that are not contained in the nature and intrinsical quality of the agent".[1] The question is, whether freedom or liberty is also, and equally, and in the same sense, a reality, when regarded as belonging to immanent acts of choice, as it is when it belongs to overt bodily movements. Or in other words, Is there such a thing as freedom in adopting one desire to the exclusion of others, in immanent action? Is there ever an "absence of all the impediments" to choice "that are not contained in the nature and intrinsical quality of the agent" choosing?

It is also easily made evident that, in the latter kind of actions, as in the former, there must be a real and positively known agent, as a requisite constituent of a real and positively known action. A real action is nothing more nor less than a real agent in operation. Real freedom is a property or character inherent in such actions. In order, then, to have a positive knowledge of real freedom, we must have some positive knowledge of the real actions in which it is inherent; and to have a positive knowledge of real actions, we must

[1] *Of Liberty and Necessity;* Hobbes' English Works, edit. Molesworth, vol. iv. p. 273.

have some positive knowledge of the real agent, whose actions they are.

The neglect of these requirements leads straightway to two opposite sophisms, which customarily contend with each other for possession of the field of action. I mean, that to set up an abstract or transcendental Mind or Ego as the Subject or real agent in all conscious action, is to set up as a reality something of which we have no positive knowledge, and which, so far as our knowledge goes, is an unreality. Upon which the result follows, that this unreal agent may be treated either (1) as pure activity, and thus as an absolute originator of action, which is the sophism of the Indeterminists, or (2) as pure passivity, that is, as an inert recipient of impulses, which is the sophism of the Compulsory Determinists. The plain fact, which cuts the ground from below the feet of both, is, that an abstract entity, like the Mind or Ego so imagined, can neither act nor be acted on, being a mere descriptive word hypostasised, empty and unreal. We are deluded by the grammatical construction of "*I*," as a nominative case, with verbs active and passive; and so led on to attribute to it a separate and substantial existence, without asking either for the analysis of the perception we have of it, or for the real conditions upon which that perception proximately depends. These two last-named things are the realities involved in the term "*I*"; and before we can discuss the question of Free-will as a reality, we must have in our thoughts a real agent and real actions, positively known to consciousness in both ways, as the object-matter of the discussion.

Of the Indeterminist sophism it is not necessary to speak at length. Its effect is to maintain the reality of Free-will as a fact, however fallacious may be the reasons alleged in support of it; and then, the fact being admitted, and the consequence of moral responsibility drawn, the real mechanism of action, and of self-conscious judgment of action, remains unimpaired, as the object-matter of ethical analysis. The errors involved in the original sophism are of a theoretical nature, the practical consequences of which are confined to the discredit which they cast on the fact of Free-will, when their fallacy is discovered. The empty and fictitious Ego of the Indeterminists is really a superfluous encumbrance of their ethical theory, from first to last; and at every stage of their ethical argument the real facts can be seen shining through, or at least can easily be read into, their fallacious language, without doing any violence to the facts themselves. But this is no defence of the theoretical error

which is at the root of the sophism. Their Ego, taken literally, and as they mean it to be taken, is a non-entity, and involves the inconceivable idea of action originated *ex nihilo*. Such action would be strictly what we intend by the word *chance*; the idea of *real chance* itself being also inconceivable. No such action can possibly be the ground of moral responsibility, in which the idea and fact of Law are everywhere involved. An agent who was perpetually originating actions *ex nihilo, mero motu*, without antecedent motives, would be wholly lawless as well as inconceivable. If free-will and moral responsibility could only be maintained on the footing of ideas of this stamp, they must of necessity be regarded as illusions.

Perhaps, in passing, I may be allowed to express a regret that a writer to whom moral and religious thought owes a deep debt of gratitude, Dr. James Martineau, should have counted me as an opponent of Free-will, apparently on the ground of my Determinism, in his important work *A Study of Religion* (1888), vol. ii., pp. 237-239, where he does me the honour of controverting what he takes to be my views on this question. He seems unacquainted with what I have at different times written on the subject in this Review prior to the date of his work,[1] and to be aware only of a short Letter published in the *Spectator* for January 25, 1879, which I should hardly have thought it worth his while to notice, and the drift of which he totally misapprehends. Its purpose was, not to combat Free-will, but to show that those who hold it must logically be Determinists, in the proper sense of that term.

Dr. Martineau, to judge *inter alia* from his mode of stating the main question at p. 199, seems also unaware that the time-honoured controversy between "Necessarians" and "Libertarians" enters on an entirely new phase, and assumes a wholly different character, from the moment when a positively knowable physical substance, the neuro-cerebral system with its physical adjuncts, whatever these may turn out to be, instead of an hypostasised word, such as *Mind* or *Ego*, is taken as the real Agent or Subject of conscious action.

Venerable as the assumption of an immaterial agent may be, it is still nothing more than a traditional assumption.

[1] (1) "Dr. Ward on Free-will," MIND No. 18, April, 1880; (2) "Free-will: A Rejoinder," No. 21, Jan., 1881; (3) "Free-will and Compulsory Determinism: A Dialogue" (originally read before the Aristotelian Society), No. 40, Oct., 1885.

When we trace back the various departments of knowledge to their sources in experience, we find, that the distinction between consciousness and its proximate real conditions, whatever these may be, and not the distinction between Mind and Body, is the true philosophical basis of the science of psychology. Proceeding on this basis, and looking, not for causes, but for the real conditions of the phenomena which we are investigating, we farther find that, in all psychological questions, it is indispensable to have some hypothesis or other as to the nature of the real agency upon which the phenomena of consciousness depend, and to which we refer them for explanation. An hypostasised word is useless, and worse than useless, as a working hypothesis. I therefore adopt the only alternative remaining for which there are positive grounds, namely, the neuro-cerebral system, as the immediate real condition of consciousness including volition; but always in the character of a working hypothesis only, without professing that, even if it should be verified by a sufficient experience as the true theoretical basis, it would solve the ulterior question—a question, moreover, which would be one of cause, not of real condition—How, or by what hidden nexus, consciousness is attached to a physical agent? Which question, it must also be remarked, would be equally remote from solution, in case the alternative hypothesis, that of an immaterial substance or agent, were adopted in its stead.

The alternative which I thus adopt is, in fact, that which Locke suggests, without adopting it, in a famous passage near the beginning of chapter 3, book iv., of his great *Essay*, in which, among much beside to the same purpose, he says: "We have the ideas of matter and thinking, but possibly shall never be able to know whether any mere material being thinks or no; it being impossible for us, by the contemplation of our own ideas, without revelation, to discover whether Omnipotence has not given to some systems of matter fitly disposed, a power to perceive and think, or else joined and fixed to matter so disposed a thinking immaterial substance; it being, in respect of our notions, not much more remote from our comprehension to conceive that God can, if he pleases, superadd to matter a faculty of thinking, than that he should superadd to it another substance with a faculty of thinking". To me it seems much nearer our comprehension, instead of only being "not much more remote from" it, to conceive the connexion between matter and thinking immediate and direct, than to conceive a wholly imaginary immaterial sub-

stance interposed between them. And for two reasons. First because the latter hypothesis involves two assumptions of an unknown nexus instead of one. Secondly because the agent assumed by it is nothing more than a shadow-man, within or behind the real man whose actions are to be explained, and thus virtually offers the *explicandum* over again as its own *explicatio*. But to return to the consequences of the immaterialist hypothesis.

The case is very different with the opposite conclusion, drawn from the same hypothesis of an abstract and empty Ego, by using it as a pure passivity, which is the sophism of the Compulsory Determinists. The use which they make of the fiction is wholly different, though equally fallacious. They use it to deny, not to assert the fact of Free-will as a reality. With them, the pure passivity of the supposed agent secures its unreality as an agent, and consequently the unreality of its supposed acts. These so-called acts of the fictitious agent, the purely passive Ego, are resolved into a conflict of motives issuing in the emergence of one as victor over the rest, which emergence it would plainly be an illusion to call an act of choice on the part of the Ego, even supposing it to exist. Not the Ego, but whatever is from time to time the strongest motive, which imposes itself on the Ego, is the principal agent, which, by its victory over weaker motives, determines, in their view, what we fondly call the Ego's choice. The original fallacy is here precisely the same as in Indeterminism, namely, the assumption of a shadow-man, or abstract Ego. And if this were the only argument brought forward by Compulsory Determinists against the fact of Free-will, we might be content with applying the same brief criticism to both, and pass at once to consider the real mechanism of choice, in which freedom will be found an essential feature.

But there is another notable confusion of ideas, used as an argument by Compulsory Determinists, against the reality of Free-will, sometimes alone, sometimes in connexion with the fallacy of the abstract Ego, which cannot be so briefly dismissed. This confusion consists in supposing that, when the will is said to be free, the freedom intended is a freedom from subjection to laws of Nature. Now it is only Indeterminists who can intend a freedom of this kind, when they speak of the will being free. They indeed must do so, if they are consistent; inasmuch as their abstract or transcendental Ego, which is Chance personified, is *eo ipso* imagined as free from Law, in the

sense of law natural, or Uniformity of Nature and the Course of Nature. How otherwise could it originate action *ex nihilo* and *mero motu?* But Determinists, simply in virtue of their Determinism, hold and must hold the doctrine of the Uniformity of Nature, and in fact of the universal reign of Law throughout the whole range of existence. Existence is not conceivable apart from Law. The foundations of the conception of Law are laid in the most universal elements of all perception and all consciousness; I mean, in the form of all perception, Time, and in the forms of all visual and tactual perceptions, Time and Spatial Extension, together. To conceive anything whatever absolved or free from Law is to conceive its existence ceasing. Pure non-existence alone has no law.

But though Compulsory Determinists are right in asserting the universality of Law against the Indeterminists, who maintain a real agency absolved from it, still the fact of Law being universal is no argument against freedom in immanent volitions, any more than it is an argument against freedom in overt actions, that is, in men's bodily movements, in every day experience. All real agents and all real actions are subject to laws of nature, and cannot exist or be performed without being so. Here it is that the most striking confusion of ideas on the part of Compulsory Determinists shows itself. They confuse laws of nature with civil laws, or commands enforced by human superiors, and attribute to the former a constraining and compelling power, which belongs only to the latter. Laws of Nature are brief expressions, in human language, of facts of nature which are found to be general or uniform, either in their intrinsic character, or in the order of their collocation or occurrence. Their existence is solely in the facts, and as part of them. If we speak of them as having a separate existence, we must speak of them rather as made by, than imposed upon, the facts of which their statement is the expression. Unlike Civil Laws, they *cannot* be broken or disobeyed; for any facts which broke or disobeyed them would *ipso facto* alter the very laws which, by a metaphor, they are said to break. If freedom in volition is a real fact, it is itself an instance exemplifying laws of nature. The fact of freedom in volition is the thing to be proved or disproved, not the agreement or disagreement of its conception with the conception of laws of nature. The simple truth is, that, of those who assert freedom in volition, none but Indeterminists understand thereby freedom or exemption from natural law. The fallacy of Compulsory Determinism, which springs from this confusion of

ideas, consists in attributing a compelling power to Laws of Nature, as if they were Statutes in a Statute-book, enforced by a sovereign power, only with the *differentia* of being valid for all Time and Space.

This fatal confusion is greatly aided, even where it is not originated, by introducing the ambiguous word *Necessity* into the question, and opposing it to Liberty, without carefully distinguishing between the two meanings which the word conveys. First, it means a necessity of thought; whatever we cannot but perceive or think. In this sense, every known fact is necessary in its own place and circumstances, so far as these are truly known, and free-will itself, if known to be a fact, would be a necessity or necessary fact, in the world, of which it was a known feature. Secondly, it means compelling power, a physical force or energy too strong to be successfully resisted. In this sense, motives of conscious action, when resting on physical brain processes, may be irresistible by counter motives, and thus act as compelling forces rendering the actions resulting from them compulsory. Laws of Nature, when truly known, are necessary in the first sense, as having taken their place among thoughts which we cannot avoid accepting. Some conscious actions, but by no means all, are necessary in the second sense. The motives which compel them, and indeed all motives, to the extent of the energy which they exert, seem to inaccurate reasoners to lend their efficiency to the laws of nature which are exemplified by their action, and thus, favoured by the ambiguous term *necessity*, invest the Laws of Nature universally, in their eyes, with compulsory power.

Now among the motives which have compulsory power over actions are those which have been adopted by choice, and have thereby proved themselves the strongest of the motives in conflict at the moment of choice. Onwards from that moment of choice, in which they are adopted by volition, they exercise, for a time, a compelling power over the course of action. But what of their state, and degree of strength, before and up to the moment of choice, that is, during the period, long or short, of the deliberation which precedes it? Compulsory Determinists are apt, I think, to read back into the motives, as they were before and during the period of deliberation, the degree of strength which they possess after the moment of choice or volition which ends it, and imagine the motive which is proved to be strongest by the fact of its being chosen, and which then governs the action dictated by the choice, to have been the strongest from the beginning of the deliberation, and to have governed the deliberation or

process of choosing, as it subsequently governs the action chosen.

But a close consideration of the phenomena seems rather to point the other way, and warrant the opposite conclusion, namely, that the victorious motive owes its superior strength at the moment of choice, to the act or process of deliberation, which terminates in choice, at least as much as to its own initial degree of strength compared to the initial degrees of strength of the other motives, with which it is said to have been in conflict. The kernel of the question of Free-will lies in the question thus opened, after divesting it of the logomachies built up round it by the various confusions of thought which have been previously noticed. These confusions attached to the idea and reality of freedom; we have now to do with those which attach to the idea and reality of volition, as a specifically distinct action, to which freedom belongs, and which, in virtue of its property of freedom, takes the name of Free-will. Thus volition now becomes our immediate object of enquiry, as freedom has been hitherto.

Here then it is, that we enter upon the second part of our examination, which must finally decide for us the question of the reality of free-will, an examination into the mechanism of deliberation ending in choice. What is it to deliberate and choose? What are the essential characteristics of actions of this kind? I say of deliberation and choice, or of deliberation ending in choice, because choice involves deliberation however brief or cursory it may be, and is impossible without it, because it involves the representation of alternatives. In drawing out the whole act called choosing into two parts, deliberation and choice, a process and the moment of its termination, we are, as it were, magnifying it under the microscope of analysis, the first application of which yields this distinction. Two further steps remain to be taken, the first being a somewhat more minute analysis of acts of deliberation ending in choice, and the second a separation or contradistinction of those acts from others which are liable to be confused with them. I begin with the first, and with the first division of it.

Deliberation, prior to the act of choice which terminates it, plainly involves (1) a consciousness of incompatible or alternative desires, (2) a comparison of their relative degrees of desirability, and (3) a prior volition to compare the alternatives and to adopt, in the immediate future, that which shall appear the most desirable; which adoption is the act of choice which terminates the deliberation, and completes the volition as a whole. The prior volition

spoken of does not enter into the volition which we are supposed to be considering, except as setting on foot and maintaining the acts of deliberation and choice of which it consists. Deliberation is therefore primarily a process of thinking directed to know something, and volition enters into it in no other way than as it enters into all processes of conscious thought and judgment, of which deliberation with a view to action is the practical mode. This does not prevent its immediate, as distinguished from its ulterior, purpose being knowledge. Its ulterior purpose is in the action which as a whole it helps to determine.

Next, as to the act of choice which terminates the deliberation. This is undistinguishable, in point of nature, from acts of selective attention in perception and thought, such as enter into the deliberative process, and with which I must here assume that we are already familiar. Its distinctive character as an act of choice consists in its standing as the outcome and termination of a deliberative process, the End at which the prior volition, above spoken of, aimed. It is immediately known by two features only, one of which gives it the character of an *act*, the other the character of an act of *choice*. The first of these consists in the sense of effort or tension, which may be great or small according as the alternative desire adopted is more or less distinctly felt either as disagreeable, or as difficult of retention or execution, in comparison with the desires which are rejected on the ground of their being less desirable on the whole. I need not stay here to prove what has been abundantly proved by others, Prof. W. James and Dr. Münsterberg for instance, that this element of conscious choice, namely, the sense of effort accompanying the experience of it, is not an immediate concomitant of any efferent innervation, and therefore cannot be said to be a sense or perception of neural or cerebral activity. At the same time, the distinction between action or activity on the one hand, and feeling, perception, and thought on the other, so far as it is an immediately perceived distinction within consciousness, seems to be given ultimately by the sense of effort only, which thus becomes the *differentia* of conscious action, the mark by which we distinguish in conscious processes their apparent character of activity or conation, from their character of feeling, and from their character of cognition.

The other feature in acts of choice, to which their selective character is due, consists in a consciousness of a decisive change in the relative desirabilities of the alterna-

tive desires represented in the deliberation, including the retention and intensifying of one, the weakening or disappearance of the others. This also is immediately known only as a consciousness, not of the cerebral re-action or discharge, acting either by way of stimulation or by way of inhibition, upon which it immediately depends, but of a preponderance of desirability (for whatever reason) in, and exclusive occupation of consciousness by, one of the alternatives supported by the cerebral processes which underlie the previous deliberation; of which processes the cerebral re-action or discharge spoken of, which is the real act of choice, is the concluding member. This consciousness is the consciousness of what we call *our* selection of the most desirable alternative and dismissal of the rest; and otherwise than as so perceived we have no direct knowledge of our own act, any more than we have direct knowledge of physical objects and agencies, otherwise than as they are perceived in consciousness. So also of the neural discharge, or whatever else may constitute the real act of choice, we are, at the time of its taking place, wholly unconscious; our knowledge of it is merely inferential. We are conscious only of its effects in consciousness, that is to say, of the retention and intensifying of the desired alternative, the weakening or vanishing of the others.

Two things result from this analysis. First, in what we call the Identity of the Ego, the identity is really that of the process-content of consciousness, and cannot be anything else, if that identity is immediately perceived, as is commonly and truly supposed. This, in cases of choice, is perceived as an identity between what is anticipated before the moment of choice, namely, that a selection is about to be made between given alternatives, and what is remembered after the moment of choice, namely, that a selection has been made between those same alternatives. The sameness of the alternatives, in anticipation and in remembrance of the intervening moment of choice, yields the experience of the sameness of the whole process-content of consciousness, including the experience of the choice itself. It is only in retrospect that we are originally conscious of this identity; but of course, when we have once become familiar with it as a constantly recurring feature of experience, our knowledge or awareness of it may be distinctly present, by association, at any moment, whether of retrospect or of anticipation; that is to say, self-consciousness may then accompany any conscious process.—Secondly, in what we call the Activity of the Ego in choice, the activity

is neither an activity in the supposed Ego, nor immediately perceived as an activity at all. The sense of effort, which is an immediately perceived ingredient in our experience of choosing, is the sole ultimate ground of our distinguishing some process-contents of consciousness as activities, and this neither tells us what an activity is, nor that it is inherent in an Ego or in consciousness.

In these two points, taken in combination with neuro-cerebral processes, we have, as I contend, the true (though far from complete) psychological explanation of those phenomena which we call, in common-sense language, *our own conscious actions*. The psychological explanation of all phenomena, as they are apprehended by common sense, consists in turning them, by analysis, into neural processes together with their concomitant and dependent process-contents of consciousness; both elements of the explanation being of a verifiable nature, and together constituting a different mode of representing the phenomena which they are required to account for. This alone is true psychological analysis. Contrast this with the pretended explanation afforded by inventing an abstract or transcendental Mind or Ego, a shadow-man as I have called it above, and referring the phenomena to its agency, without any change in the common-sense mode of apprehending them. This is nothing but the *explicanda* repeated, *plus* an unverifiable hypothesis.

I now pass to the second main head of the analysis. The actions from which acts of deliberation ending in choice are contradistinguished by the characteristics mentioned, but which are liable to be confused with them, owing to their common characteristics of consciousness and desire, are actions in which no alternative desires are contemplated, still less compared with a view to adopt that which shall appear the most desirable. They are actions in which some one desire is adopted as soon as it arises in consciousness, thus preventing alternative desires from rising above the threshold, and excluding all possibility of deliberation. Reactions of this kind, though accompanied by consciousness, are not volitions in the strict sense, but fall under the description, due, I believe, to Dr. W. B. Carpenter, of consensual reflex actions. They are not volitions, since they include no choice between alternatives, and so are not consciously selective, while all true volition is choice. They are cases of action determined by a single unresisted motive, evidenced by a desire. There is no trace of free-will here. The motive and the action determined by it may be free,

inasmuch as they may be unhindered by impediments extraneous to themselves; but that is not the question. The will is not concerned in them at all. They may be cases of free action, or perhaps more strictly reflex process, but they are not cases of free volition.

We must, however, be careful to distinguish, from these wholly undeliberative actions, those in which there is a moment of deliberation, though it may be excessively brief. It is these which throw the most light on the nature and function of volition, from the very nearness in which they stand to non-volitional action; thus enabling us to define the limits of what may be called the "inner man," by the union of selective re-action with self-consciousness, without having recourse to the hypothesis of an abstract or transcendental Ego. I have in view cases in which we are aware that the one desire, which seems to take immediate possession of consciousness, is opposed by other desires, which we do not choose to entertain, but immediately reject and put aside by directing attention to the one presented. These are plainly cases of volition and choice, since we are conscious of there being alternatives, and distinctly choose to avoid considering them. We adopt, almost instantaneously, by an act of choice, the single desire which has positively presented itself in consciousness.

Under actions of this class there are two cases, broadly distinguished from each other. One is where the desire, almost instantaneously adopted, is adopted because the choosing power, or will, is weak; the other, because it is strong. In the first case, the almost instantaneous decision is arrived at owing to the overmastering strength of the desire adopted, compared to the desire for deliberating before adopting it. In the second case, its being arrived at is owing to frequent previous deliberations, and frequent acts of choice in accordance with them, which have rendered deliberation in any later instance unnecessary. In actions falling under the first head, the will is mastered by a powerful motive; in those falling under the second, the motive which it follows receives its strength from the will itself, in the character of a deliberating agency. Still, in both cases, there is deliberation, and, as will be seen presently, to the extent of the deliberation there is freedom.

In these cases, in which deliberation is at a minimum, but which no one will deny to be conscious volitional actions, we see exemplified the analysis of volition into deliberation and choice, which was given above. Volition is thus a complex action, and the mechanism of brain processes, on which

it depends, must be complex also. But since volition, though complex, is indivisible, as we have also seen; that is to say, is a single action, the constituents of which cannot be separated without destroying its volitional character; we must infer, that the brain processes also, on which it depends, act together normally as an organic whole, in whatever way they may be combined in the brain structure, and in however many places of the brain structure the same combination of processes may be repeated. It follows, that another essential characteristic of volition is, that the agent who deliberates is the agent who chooses, since the parts of the mechanism subserving the volition form together an organic whole, which is the real agent of the total action. In other words, it is essentially characteristic of volition to be self-determination, or rather, more precisely, the self-determination of a self-determining agent.

We have, moreover, just seen, that the power of deliberation ending in choice, which is volition, may be, on the one hand, weakened by some particular overmastering motive down to the point at which it ceases to be volition by the disappearance of deliberation altogether, and on the other hand strengthened by the habit of deliberating and choosing, up to the point at which, again in the case of particular motives, it likewise ceases to be volition, by a similar disappearance of deliberation from its action. Volition, therefore, holds a middle position between these two extremes, an action retaining its volitional character only so long as it contains a certain minimum of deliberation and consequent choice among its actual features or constituents. The results for the individual Subject, in point of general volitional power and strength of character, are of course widely different, stand indeed in the most trenchantly marked contrast, in the two cases. But both cases alike show, that action which was once volition may lose its volitional character, and become a fixed and indurated mode of action, which is habitually and spontaneously repeated, on every occurrence of the appropriate stimuli.

The great difference between these two modes, in which volitional action may become habitual and spontaneous, lies in this, that the former is owing to the action of a motive or desire originally extraneous to volition, the latter to the action of volition itself. The first alone has interest for us in the present question, since it alone exhibits volition as fettered or impeded in its action by a motive or desire which it has not sufficient power to resist. That such cases occur is undeniable. And even where the force of some over-

mastering desire does not go to the length of destroying the power of deliberation altogether, still, to whatever degree it obtains the mastery, and weakens the power of deliberation, to that extent it fetters the action of volition, and impairs its character as an agency which is consciously self-determining.

A question is thus raised which brings us at last to the root of the whole matter—Where and how are we to draw the line between volition itself and desires or motives which are extraneous to it, and fetter its action from without? The answer must be drawn from what has been already said concerning the essential characteristics of volition. A desire or motive wholly undeliberated upon is extraneous to volitional action, but deliberating upon it incorporates it therewith; and it may be added, that the act of choice, which terminates the deliberation, incorporates the desire or motive adopted with the nature and habits of the agent. It is thus through deliberation that what is originally extraneous and pre-volitional becomes part and parcel of volition, by having its operation delayed until it has been brought into competition with other desires or motives, and modified by the already existing habits and powers of the cerebral organs concerned in deliberating; so that the result, which is the act of choice, is the result of this deliberative competition and modification, and not of any single desire or motive which enters into it, taken alone.

The physical brain process or action, which supports a concomitant conscious process of deliberation and choice, is, taken alone, a process of organic and living mechanism, not teleological, that is, not guided by conscious purpose. But inasmuch as the consciousness which it supports includes anticipation, comparison, judgment, and purpose, the action taken as a whole, (physical process and conscious process together), has a teleologic or purposive character. And thus it is, both that in volition the living mechanism of action ceases to be a "blind" mechanism, and also that in volition we have the first origination of the idea of design and teleology. We know our own character by means of the consciousness which accompanies and depends upon the physical brain process, and whenever we think of ourselves as concrete agents, including both processes, we think of ourselves as acting for anticipated Ends, that is, by design or purpose. So far we think truly; but at the same time it is true, that the design or anticipated End, taken in abstraction from the physical half of the process, or as if it belonged to the conscious half only, is no real link in the train of our

action, and has no real efficiency in producing its results. Final Causes, as they are called, are no real conditions in determining action.

Until physiology shall have made considerably greater progress than it has made hitherto, even at the present day, we have no means of distinguishing and describing the minuter physical steps and organic parts concerned in the concrete process spoken of, but are driven to describe them solely by the several steps and parts of the conscious half of the whole concrete process. But we know enough to be aware, that this is no argument against either the reality or the indispensability of the physical half of the process, as the proximate real condition of the other half. Described in terms of consciousness, deliberation means representing and comparing different and antagonistic desires, with a view to ascertain their relative degrees of desirability. It may be a long or a short process in different cases, and may include the recall into memory or imagination of the most remote consequences and connexions of the desires compared, as well as the consideration of parallel or analogous cases, or instructive examples, and also the summoning up of other desires and aims besides those originally in debate, to serve either as their allies or their substitutes. But whether the process be long or short, simple or complex, the effect of deliberating on the question at all is inevitably that of making the whole content of the process of deliberation part and parcel of the content of the volition, in which the deliberation is included. Desires or motives which make no part of deliberation continue, as originally they are, extraneous to volition. But they cease to be extraneous to it, the moment they become objects of deliberation, with a view to choosing between them.—The importance of these results for Ethic consists in the evidence they afford, that there is a class of actions, namely, volitions, or deliberations ending in choice, which cannot be dissociated from any positive idea which we can form of our Self. For just as water does not cease to be water, because it can be analysed into hydrogen and oxygen, so the Self does not cease to be a Self because it can be analysed into brain and consciousness. But on these points it is not here the place to enlarge.

This, then, being the nature of Volition, we are brought face to face with our final question—Is volition free, and in what sense? Or in another shape—Is Free-will a reality? Now these are questions which, after the foregoing analysis and discrimination, almost answer themselves. Since volition is deliberation and choice in a real

agent, its freedom must consist in the absence of impediments to deliberating and choosing. And since it is clear that as real agents we do deliberate and choose, the freedom to do so must be commensurate with and inseparable from the act of so doing, that is, the act of volition. Will means and implies Free-will; and unless free has no existence. Volition and Freedom of volition begin and end together. Freedom in willing is merely the power to will.

Consider it thus. Volition is completed in the act of choosing, that is of giving exclusive attention to, one out of several represented alternative desires, an adoption which is still future, still to be made, during the period of deliberation and up to the moment of choice. This element of futurity in the action is that which makes us characterise it as free. The freedom of the action of choosing is the action itself characterised by its relation to the future, its termination in the actual moment of choice. But this is only saying in other words, that it is not the action as completed but the action as having the power of being completed—the action *in potentia* not *in actu*—that we call free. Up to the moment of completion, the moment of choice, *i.e.*, during deliberation, comparison, and weighing of alternative motives or desires, the volition is not an act of choice, but a power of choosing. That power in the volition is its freedom.—Now the agent in volition is a self-determining agent. And what volition is freedom is, since freedom is the power of doing what volition does. Free-will is therefore the power of self-determination in conscious acts of choice, volition being the self-determination in its entirety. Volition is the name for the whole action, of which Freedom is the potential state, and Choice or Resolve the completing act. When we have chosen we are no longer free to choose, but we are free until we have chosen. Those fetters of the will which depend on prior acts of choice are all self-forged.

From the foregoing account it can easily be seen what is meant by the sense of freedom, and what relation it bears to real freedom in volition. The sense of being free in choosing is a feeling which we experience during deliberation, and up to its termination in actual choice. And the term *sense of freedom* describes our awareness of being engaged in deliberation and ignorant which alternative we shall select. Until we know what this process in reality is, and in what its freedom really consists, we do not and cannot know the meaning of the term *sense of freedom;* for it is plain, that freedom is not itself a feeling which is

its own evidence, as sensations or emotions are, say for instance, light or sound, grief or joy, anger or love, in all of which the feeling and the felt are one in point of content. It was therefore admitted at the outset, that the sense of freedom was not of itself evidence, that freedom, its so-called object, was a reality. But now, by showing that freedom is a reality, it is also shown that the feeling which is the awareness or sense of it is no illusion, but is the perception of a certain feature in volitions as processes of consciousness, which shares the reality of the volitions themselves, and therefore also of the brain processes upon which volitions depend.

The case is very similar to that of sense of effort, which also comes forward in acts of choice, as already shown. Each of these feelings is the perception or awareness of a particular feature in the content of volition as a process of consciousness; neither has a positive object of its own, apart from that feature in the volition, of which it is the awareness. Neither the real effort nor the real freedom in the brain processes which support volition, is the object perceived by what we call sense of effort and sense of freedom. Sense of effort is a representation of the difficulty of attending to one out of several contents of consciousness, as experienced in previous instances of selective attention. And if Dr. Münsterberg's theory is correct, the difficulty so represented may be resolved ultimately, in every case, into the feeling of muscular strain or tension, received through afferent nerve channels. Sense of freedom is much simpler, but still is a representation of something which is independently present in consciousness. It is the representation of our ignorance of the issue of a deliberation which is at present in progress.

One more remark I would make, before quitting the subject of Free-will. It is, that the kind or quality of the desires or motives, adopted or rejected in deliberation and choice, is wholly irrelevant to the question of freedom. That question concerns, not what we choose, but whether we choose at all, in any real sense of the word. Yet no doctrine is more common, especially among nominal upholders of free-will, than to represent true freedom of the will as consisting in a man's following his best impulses, obeying the dictates of his conscience, or going on to attain ever higher degrees of moral excellence or self-perfection. A great confusion of thought is here involved. Goodness of will is not the same thing as freedom of will. Its freedom is the condition of its goodness and badness alike.

A power to choose only the good is a contradiction in terms; and were such a power (*per impossibile*) to be attained, it would be at once the highest perfection of the character, and the *euthanasia* of Free-will. The will would then no longer choose at all; it would have done with choosing; and the brain mechanism would thence-forward work spontaneously and habitually, no longer volitionally. The will in its new shape would indeed be free;—but free from what? From the influence of evil desires and motives, not from impediments to its power of choosing between bad motives and good ones.

It will perhaps be said, that every advance made by the will in moral perfection opens a further vista of alternatives, no longer, perhaps, between the bad and the good, but between the good and the better; and that the absolute best lies at an unattainable, and in fact infinite distance. The more the power of choosing is strengthened, the more new alternatives will arise for choice. And this is perfectly true. But it does not touch the question as to what the essentials of free choice are. These are the same, whatever be the quality of the alternatives between which we have to choose, whatever the stage or degree of moral perfection, which we may have reached in our onward progress. It is as the basis of moral action, the ground in actual fact of moral responsibility for our actions, that it concerns us to establish the reality of Free-will, the reality of the power to choose between alternative desires or motives. The results which may be reached by a consistent course of choosing rightly are another matter, and so also, it must be added, are the results which will follow from pursuing an opposite line of choice. The will may be strengthened in pursuit of evil, as well as in pursuit of good. The results of either course are equally certain, the character of the individual Subject equally dependent upon the course of action which he chooses to pursue. It is in deciding upon the particular course to be pursued that the question of Free-will has its connexion with the question of Conscience. But the question of what we ought to choose is not the question whether we can choose at all. Unless the power of choosing is first established as a reality, the question, what kinds of choice are best, is left unconnected with the character of any real and self-determining agent.

II.—THOUGHT AND LANGUAGE.

By G. F. Stout.

In an article in the last number of Mind on "Apperception and the Movement of Attention" I attempted to determine the essential characteristics of a train of thought as distinguished from the mere play of association.

My general result was as follows. A train of ideas is a train of thought if and so far as the associative links between the ideas successively attended to are themselves objects of attention. This happens only when the successive parts of the series severally derive the interest through which they attract attention from their relation to one and the same apperceptive system. It is also necessary that this persistent and dominant system should be of the kind which I have called "proportional". The unity of such a system depends on a uniform plan of interconnexion common to the several subordinate groups entering into its composition. The principle of combination between these component groups is accordingly affinity in form rather than affinity in matter. A typical instance of a proportional system is afforded by a tune played or sung in different keys.

Thinking consists in a movement of attention by which an ideal whole is constructed according to the general scheme of relation characteristic of the proportional system by which the movement of attention is controlled. It follows that in a train of thought the working of Association must be essentially modified. The successive ideas composing the train have to form part of an ideal whole. This condition cannot be fully satisfied by simple reproduction in which a suggests b because a and b have been previously co-presented. Instead of this, the course of suggestion is determined by similarity of relations. a calls up β, because $\frac{a}{\beta} = \frac{a}{b}$. This modified working of Association, I have called *proportional* production. A simple instance of it is our power of repeating a tune in one key which we have heard in another.

The above summary may serve to remind the reader of the leading contents of my previous article. I shall now proceed to consider how far Thought as thus defined is de-

pendent on Language, or on signs similar to those of Language.

§ 1. *Intuitional Thinking is independent of Language.* To think is to construct an ideal whole according to a more or less definite plan. Thought appears to be independent of language and other expressive signs only when the relations constituent of this ideal whole are capable of being presented in the focus of consciousness as immediate objects of vigorous and sustained attention. Now the effect of vigorous and sustained attention, is to make its immediate object distinct with the distinctness of a definite image such as might be presented in actual sense-perception.[1] Hence it follows that thought apart from words can construct only such ideal wholes as are capable of being intuited. Independently of language, the relations between the successive objects of attention which compose a train of thought must be, in the main, concrete and definite relations in space and time. Thinking of this kind we may, following the example of Steinthal, call *intuitional thinking*. Intuitional thinking may require strenuous and persistent intellectual exertion and high intellectual power. In these respects, it is perhaps not inferior to that kind of thought which depends on language. In playing chess, in manipulating algebraical symbols, in constructing a piece of machinery, words or equivalent signs are not for the most part required. According to the testimony of Galton and others who possess a turn for machinery, thought about mechanism does not depend on language but on "mental imagery," immediately exhibiting the relations constitutive of the whole which the movement of attention is constructing. Aphasic patients, who have almost entirely lost command of language, may yet retain intact their skill at chess or cards.[2] It may appear strange that I have adduced the manipulation of algebraical symbols as an example of intuitional thinking. In so far as the algebraist in operating with symbols requires to be guided by a sense of their significance, he is, perhaps, thinking in signs analogous to those of language. But in so far as he proceeds merely according to certain prescribed rules of operation, disregarding for the time being the interpretation of his symbols, his mode of thinking is intuitional. This will appear more clearly when in § 5 we distinguish *expressive* signs from other signs.

[1] The evanescence of expressive signs noticed in § 6 (below) constitutes an exception to this statement. But the exception seems to be confined to such signs.

[2] Kussmaul, *Störungen der Sprache*, p. 170.

§ 2. *In what sense Intuitional Thinking involves Generalisation.* In intuitional thinking the objects attended to and the ideal whole which results from their synthesis are not general but particular. On the other hand, the plan of combination according to which the objects of attention succeed each other in the focus of consciousness and unite to form a whole, is not particular but general. This general plan is not, however, as such, an object of attention; in emerging into clear consciousness, the general scheme becomes particularised; it becomes embodied in those concrete and determinate relations of concrete and determinate elements which constitute the product of the process. The universal element in intuitive thinking is never itself attended to: it is to be found only in the apperceptive activity which gives interest and significance to the objects of attention. As the form characteristic of a proportional system, it controls the working of the associations by which presentations succeed each other in the focus of consciousness; so that by proportional production a specifically new whole is constructed on the model of a preformed type. A chess-player need not in actual play think about the general laws of the game or about general maxims derived from previous experience. It is much nearer the truth to say that he thinks *by means* of such laws or maxims than that he thinks *about* them. His insight into the dangers and advantages of a particular position, the particular move which suggests itself to him at any moment, his prevision of the line of play which is likely to be adopted by his adversary, are all due to the operation of an apperceptive system which has become organised in the course of previous experience. This system is the unity in which are combined the blended products of many particular experiences. It is therefore a universal. But its universality is exhibited only in the general plan of synthesis by which particular objects of attention are interconnected so as to form an intuitional whole.

§ 3. *Apperceptive Systems and "Recepts".* It is perhaps advisable to compare the apperceptive systems, which are here supposed to supply the universal element in intuitional thinking with the "recepts" which play a somewhat similar *rôle* in the writings of Mr. Romanes. A recept like an apperceptive system is supposed to be constituted by the united products of a plurality of particular experiences. It differs from an apperceptive system inasmuch as it is supposed to be "passively received" instead of actively produced. According to the view which I have propounded, apperceptive groups grow up by means of apperceptive process itself

aided by attention. Now, attention and apperception are modes of mental activity. It is therefore, in my opinion, wrong to speak of such mental formations as passively received rather than actively acquired.

In the next place, Mr. Romanes seems sometimes to regard his recepts not only as operative in the process of thinking, but as being themselves the objects thought about. He identifies them with generic images and he even compares them to composite photographs. Now the apperceptive systems on which thought depends are not images either fixed and determinate or fluctuating and indefinite. They give to the mental imagery which passes through the focus of consciousness its significance and interest, but they are not themselves part of this imagery. Robinson Crusoe[1] and Friday on seeing a ship approach their island, may both have had approximately similar mental imagery; but even at the first glance the ship was to Crusoe far more than it was to Friday. He *understood* it, as his uncivilised companion could not understand it. Now what as a mode of consciousness is called *understanding* is when considered as a psychological process *apperception*. But an apperceptive system in so far as it is merely apperceptive is not itself apperceived. It makes understanding possible, but it is not itself understood.

§ 4. *The Nature of Language.* We have seen that it is possible to think without the help of language. It is therefore possible to generalise without the help of language; for all thinking involves generalisation. But though apart from language we can generalise with reference to the objects of our thought, yet these objects are not themselves general. Apperception, Attention, and Proportional Production, construct an ideal whole according to a plan, which is general, but the resulting ideal structure has the particularity of a percept. It is an intuitional whole, not a conceptual whole. This is and must be so, because the Universal, as such, can never become an immediate object of attention.

Now language is a means of overcoming this difficulty. It is a way of attending indirectly to that which cannot be attended to directly. The signs of which language is composed are immediate objects of attention which serve as vehicles for the transmission of excitation to apperceptive systems which thus become indirect objects of attention. I propose to call the signs of language and all signs which

[1] This illustration is borrowed from Dr. Stirling's *Text Book of Kant.*

fulfil a similar function *expressive* signs. Under this head are included the natural signs of gesture-language, the conventional signs of the manual language taught to deaf mutes, and all kinds of written language as well as articulate speech.

An expressive sign must fulfil more or less perfectly four conditions:—(1) It must be an immediate object of attention. (2) It must be capable of being easily and clearly reproduced and freely controlled. This requirement, it would seem, is sufficiently fulfilled only by those presentations which we can command at will by means of actual bodily movements. We have seen, in the previous article, that a most important part is played in the process of attending to representations by the partial and modified revival of the motor activity involved in attending to the corresponding percepts. Thus, the ease and freedom with which we voluntarily reproduce a given class of representations and arrange them in varying combinations, is to a very great extent dependent upon the degree of control which we can exercise over the corresponding percepts by means of actual movements. Hence the sensory material of the various kinds of language consists almost exclusively of presentations which we can, broadly speaking, produce for ourselves whenever we like and in any order we like, independently of external conditions. This requirement is probably most completely fulfilled by articulate sounds. (3) There must be an association between an apperceptive system in its unity and totality and the particular image which functions as an expressive sign. The expressive sign must not itself be a specific component of the system which it thus represents or expresses, and it must not be specially associated with any such specific component. It must be primarily associated with the common characters, material and formal, by which the system is unified—the common relation which binds its special constituents together. (4) The expressive sign must not attract attention through its own intrinsic interest. In so far as the grammarian or phonologist is thinking about certain words, he is not thinking by means of them. We may fail to apprehend the meaning of what a person is saying, because the tone of his voice arrests our attention through its resemblance to that of some one else in whom we feel interest. So far as signs thus attract notice on their own account, they fail to fulfil their function as means of attending to something other than themselves.

§ 5. *Expressive Signs distinguished from other Signs.* Expressive signs must be carefully distinguished (1) from *suggestive* signs, (2) from *substitute* signs.

A suggestive sign merely calls up a certain idea which may then be attended to independently of it. When we purposely associate A with B, so that A may on occasion remind us of B or indicate the actual presence of B, we are using A, not as a means of expressing a *meaning*, but only as a mnemonic help. The essential point of difference is that A, when it has once suggested B, is of no further use and may be altogether dismissed. B, when once it emerges, can be understood and attended to without any further reference to A. Thus in chess-playing the shape of a knight serves only to remind the player that he can make certain moves with it. But it does no more. The moves themselves must be made the immediate object of attention. They cannot be attended to mediately through the sign which suggests them. Similarly, the chalk mark placed by the robber on Ali Baba's door was a suggestive sign. It was merely a means of identifying a certain object: when once it had performed this service, it might be rubbed out. In general, suggestive signs serve only to bring something to mind: they are not a means of *minding* it when once it is recalled. An expressive sign, on the contrary, is a means of attending to its signification. The meaning of a word is not explicitly unfolded in distinct consciousness. It is not an immediate object of attention, because it is not an image. The ideal whole, which the movement of attention constructs in the process of thinking cannot, therefore, take the form of a scheme of relations between Universals—except by the aid of expressive signs. These, being themselves immediate objects of attention, and being associated with the apperceptive systems which constitute their *meaning*, single out these systems so as to give them unique dominance as factors operant in mental process. They do not indeed make them salient in consciousness in the same way in which an image may be said to be salient, *i.e.*, as being definite in outline and distinct in detail. Nevertheless, expressive signs invest the meanings which they express with the peculiar kind of salience of which they are capable. When we are talking, writing or reading fast and fluently, or listening to a rapid discourse, it often happens that the only distinct contents of consciousness are the words we use; but this merely shows that the distinct content of consciousness is not the most important content. We feel interest in what we say, hear or read, which cannot have its source merely in the visual, audile or motile images that constitute the signs employed. This interest shows that the signification of the signs becomes present to consciousness as the signs themselves are successively attended

to. The mental systems with which the words are severally connected are invested by them with unique predominance over other contents of subconsciousness—other indistinct constituents of the "ideational continuum".

Expressive signs differ from substitute signs in a manner exactly the inverse of that in which they differ from suggestive signs. A suggestive sign has fulfilled its purpose and becomes of no further avail so soon as it has suggested its meaning. A substitute sign is a counter which takes the place of its meaning; so long as it fulfils its representative function, it renders useless all reference to that which it represents. The counters are manipulated according to certain rules of operation, until a certain result is reached, which is then interpreted. The operator may be actually unable to interpret the intermediate steps. Algebraical and arithmetical symbols are to a great extent used as mere substitute signs. The same is true of the symbols employed in formal logic. It is possible to use signs of this kind whenever fixed and definite rules of operation can be derived from the nature of the things symbolised, so as to be applied in manipulating the signs without further reference to their signification. A word is an instrument for thinking about the meaning which it expresses; a substitute sign is a means of *not* thinking about the meaning which it symbolises.

§ 6. *Evanescence of Expressive Signs.* I have said above that the distinct content of consciousness is not its only content. I now wish to point out that sometimes, when general interest and excitement are at their highest pitch, consciousness has no distinct content at all. This is due to what may be called the evanescence of expressive signs. The word is not attended to for its own intrinsic interest, but only as a vehicle transmitting a wave of excitation to the mental system with which it is associated. If it adequately discharges its function as an intermediary object, its own distinctness or indistinctness is a matter of indifference. Now, the more rapidly and easily it transmits the excitation which it receives, the less will be its own intensity. Hence, the more perfectly it discharges its function as a sign, the less conspicuous and impressive will it become as a particular presentation. Accordingly, it constantly tends to become obscured, and in some cases altogether to disappear from distinct consciousness. Often when we are much interested in reading or talking, our minds are so engrossed by the subject-matter of discourse that the words are very much obscured, and perhaps become wholly sub-conscious. When this takes place, there may be, strictly speaking, no distinct presentation of

any kind in consciousness, the direct object of attention being degraded to a mere sub-conscious intermediary through which the remote object becomes intensified.[1]

§ 7. *Language as a development of Self-consciousness.* By means of expressive signs, mental systems, which could otherwise only serve to apperceive objects of attention, become themselves transformed into objects of attention, apperceived by more comprehensive systems. In this way, language objectifies what would otherwise remain relatively subjective—a factor operative in the process of thinking, but not an object of thought—a condition of understanding, but not itself understood. Thus the development of language is a development of self-consciousness. Without it, we may bring before the focus of consciousness a succession of images: but without it, we could not apprehend as component parts of a train of ideas those mental systems which comprehend in systematic unity a plurality of particular presentations. The most fundamental constituents of our mental constitution would escape our mental grasp, if expressive signs did not afford us a handle whereby to lay hold of them.

§ 8. *Concepts and their Interaction.* A concept is an apperceptive system objectified by means of an expressive sign. It is to be noted that in becoming an object of attention, it does not cease to be an apperceptive system. It is a concept because it is at the same time both the one and the other. As objects of attention, concepts are component parts of the train of ideas, and they are apperceived by more comprehensive systems, just as particular presentations are. They may even become associated like images, so that one tends to call up another in serial order by simple or proportional suggestion. Hence, in every conceptual train, there are two distinct groups of associations simultaneously operative: (1) the association of signs *inter se*, (2) the association of meanings *inter se*. Sometimes the flow of ideas is predominantly determined by the verbal connexions, sometimes by the conceptual.

But what is the nature of these conceptual connexions? In order to answer this question, we must take into account the other essential characteristic of a concept. It is not merely an object of attention; it is also an apperceptive system. Accordingly, the relations through which apperceptive systems co-operate must also constitute associative links between concepts. But it is more important to take account

[1] Cp. James Mill's *Analysis*, iii. § 10.

of the peculiar inter-connexion of concepts which is produced by the process of conceptual thinking itself.

§ 9. *Syntactical Combination.* Syntactical combination is the construction of an ideal whole by synthesis of concepts. But what is meant by the *synthesis of concepts?* The synthesis of intuitional thinking yields a system of concrete and definite relations in time or space—a perceptual whole. But concepts cannot be grouped in this manner. The whole formed by their synthesis must be a conceptual, not a perceptual, whole. Now, attention, working through the expressive sign, serves only to intensify the objects to which it is successively directed. It does not of itself create relations between them. Such relations must be generated by the nature and interaction of the concepts themselves. Hence, as concepts are apperceptive systems, the synthesis of concepts must consist in the apperception of one concept by another. A train of thought, in so far as thought depends on language, consists in a series of successively objectified mental systems, each of which apperceives and is apperceived by its predecessor. An illustration may be drawn from any group of words combined so as to yield an intelligible meaning. In the sentence—"John eats apples," the word "John" stands for a concept which combines in systematic unity all that the speaker knows of the person referred to. It does not stand for a particular presentation, but for a system of presentations, of which only the ultimate components are particular. It fixes the attention of the speaker or of the silent thinker on a totality of diverse states, actions and relations, simultaneous and successive, possible and actual. "John" is not a determinate image but a Universal, which, as such, includes within it a multiplicity of determinations incapable of being united in any particular image. The word, "eats," also stands for a Universal—the general concept of an action, which may be performed by different agents or by the same agent at different times and which may vary in manifold ways in particular cases. Now, when in the sentence under consideration the word "John" is followed by the word "eats," the corresponding mental systems are excited to activity and they apperceive each other. The product of their interaction is a new system, which forms an integral part of both of them, and which may be expressed by the compound word, "John-eating". This new system is formed (1) by singling out from among all the states, acts, and relations which enter into the concept, expressed by the word, "John," that specific action expressed by the word, "eating," to the exclusion of incompatible alternatives.

This is the apperception of the concept, "John," by the concept, "eating". (2) By singling out from among the possible agents who are capable of the action indicated, the special agent John to the exclusion of others. According as John is known to be a vegetarian, a glutton, an invalid, &c., the general concept, "eating," will receive a varying kind of specification. This is the apperception of the concept, "eating," by the concept, "John". John is represented as eating and the act of eating is represented as John's act. The concepts expressed by the words "eating" and "apples" unite in a similar way to form a single system in which each receives specific determination from the other. The apples are represented as being eaten and the eating is represented as the eating of apples. I have chosen an ordinary example from a civilised language. But what has been said holds universally. The possibility of thinking by means of expressive signs depends on the mutual apperception of the ideal systems, which they successively objectify.

§ 10. *Universe of Discourse.* Thinking by means of language consists in the formation of an ideal whole by the mutual apperception of the conceptual systems, with which the words are severally associated. This, however, is only one aspect of the process. We have not merely to consider the nature of the elements which unite to form a conceptual whole and the nature of their union. We have also to take into account the permanently dominant system by which each conceptual object entering into a train of thought is apperceived in turn, and which gives to the whole series its unity of plan and unity of interest. This controlling system can fulfil its function only in so far as it is formal or proportional in its constitution. The interest through which each object attracts attention must depend on its relation to preceding parts of the series. Only in so far as this condition is fulfilled are those desultory transitions excluded, by which one object, instead of being presented as a further development or determination of its predecessors, simply displaces and suppresses them. Words are instruments of thinking, because the mental groups which they excite apperceive each other. But the mere juxtaposition of expressive signs is not sufficient to produce this result. Ordinary conversation is marked by frequent transitions from one general topic to another through associative links which are not themselves attended to. Within each sentence, it is true, the transitions are, in the strict sense, thought-transitions; this arises, as we shall see later on, from the very nature of the sentence and of those proportional systems which are the psy-

chological counterpart of the objective categories of grammar. But there is no necessary continuity in the interconnexion of sentences. The mere play of association, taking the place of thought-development, may break up the train of ideas into disjointed fragments. Thought is continuous only in so far as the evolution of the ideal train is the progressive specification of a previously indeterminate whole. This relatively indefinite schema, which becomes articulate in the process of thinking, is what logicians call the "universe of discourse," and what in ordinary language is called a "subject" or "topic". The title of a scientific treatise, for instance, expresses the subject, which at the outset is comparatively indeterminate, but which receives progressive determination as sentence is added to sentence. In relation to this general subject the whole specific content of the treatise may be regarded as a predicate.

§ 11. *The Subject-Predicate Relation.* Possibly this use of the terms, subject and predicate, may appear loose and popular. The subject of the grammarian or logician is the unifying centre of a multiplicity of acts, states or relations, and the predicate is the act, state or relation ascribed to the subject in any sentence. This distinction is of course accurate and important. But it ought not, I think, to be identified with the distinction between subject and predicate. The essential mark of the subject-predicate relation is that it constitutes a sentence. Thus we find that grammarians distinguish between the merely defining or determining use of adjectives, participles, &c., and their properly predicative function. To explain the nature of the subject-predicate relation is at the same time to explain why discourse is broken up into distinct sentences. Now the required explanation is not far to seek, if we start from the popular use of the word *subject* as indicating the general topic or universe of discourse. The predicate of the subject, in this sense, is the whole discourse through which it receives definition and specification. Predication, from this point of view, just consists in the definition and specification of what is, at the outset, indefinite and indeterminate. It is because this process takes place gradually by a successive concentration of attention, that language is divided into sentences. The predicate of a sentence is the determination of what was previously indeterminate. The subject is the previous qualification of the general topic or universe of discourse to which the new qualification is attached. The subject is that product of previous thinking which forms the immediate basis and starting-point of further development.

The further development is the predicate. Sentences are in the process of thinking what steps are in the process of walking. The foot on which the weight of the body rests corresponds to the subject. The foot which is moved forward in order to occupy new ground corresponds to the predicate.

According to this view, the subject-predicate relation is altogether distinct in kind from those relations with which it is commonly identified by grammarians. It has nothing to do with the relation of agent to action or with similar categories. It does not express any form of relation inherent in the object of thought; it springs entirely out of a subjective necessity. It is a psychological category characteristic of the nature of discourse as a mental process.

All answers to questions are, as such, predicates and all predicates may be regarded as answers to possible questions. If the statement "I am hungry" be a reply to the question, "Who is hungry?" "I" is the predicate. If it be an answer to the question, "Is there anything amiss with you?" then "hungry" is the predicate. If the question is, "Are you really hungry?" "am" is the predicate. Every fresh step in a train of thought may be regarded as an answer to a question. The subject is, so to speak, the formulation of the question; the predicate is the answer.

The ultimate subject is always the universe of discourse. In some cases this ultimate subject is also the proximate subject of a sentence. When this happens, it may not be represented by an expressive sign and it may even be incapable of being adequately expressed. Under this head come impersonal sentences such as "It rains," "It grows late," &c., and exclamations such as "Fire!" "Murder!"

§ 12. *Judgment.* The sentence is a unit of speech because it is the expression of a unit of thought. This unit of thought as distinguished from its expressive sign is a judgment. The terms subject and predicate refer indifferently both to the concepts themselves and to their verbal expression. Thus we can speak with equal propriety of the predicate of a sentence and of the predicate of a judgment. The sentence is distinctively a grammatical unit; the judgment, a psychological unit.

All thinking is composed of judgments. Intuitional thinking must proceed in successive steps, just as conceptual thinking does. There is of course as great a difference between the judgments of intuitional thinking and those of conceptual thinking as there is between a concept and an intuition. But they agree in the essential point; they are

the ultimate steps in that progressive movement of attention by which an ideal whole is constructed—conceptual or intuitional.

§ 13. *Interconnexion of Sentences.* Continuous discourse is composed of sentences. Each of these adds a further qualification to the general topic, which forms the universe of discourse. This further qualification is the predicate of the sentence. But the successive predicates are not simply juxtaposed. They unite in that ideal whole which is the product of conceptual thinking—a whole formed by the mutual apperception of the concepts on which attention is successively concentrated. Each predicate-concept must therefore be apperceived by the partially formed whole which is the product of the previous synthesis of concepts. If we take any given point in the progress of a continuous discourse, all determinations of the general topic which have emerged up to that point form an integral part of the subject, to which all subsequent determinations are attached as predicates. Consider the following series of sentences : " I took train to London ; I arrived at 12 P.M. ; I went to an hotel ; I found that all the rooms were taken ". The " I " which is the subject of the last sentence is qualified by all those which precede it. The full sentence is—" I, having gone to London, and having arrived at 12 P.M., on going to an hotel found that all the rooms were engaged ". This example may be regarded as typical of the mode in which sentences are interconnected, in the continuous development of conceptual thought.[1] The subject of each sentence is not fully expressed within the sentence itself ; it is always qualified and defined by what precedes.

It must be noted that this interdependence of sentences through which those that precede specify and define the subject of those that follow is quite distinct from that interdependence which is expressed by such conjunctions, as *if*, *because*, *therefore*, *then*, *when*, &c. These connecting particles express relations inherent in the object thought about. They therefore belong to a class of categories altogether distinct from the subject-predicate relation, which is purely subjective or psychological.

§ 14. *Occasional Meaning of Expressive Signs.* Concepts are apperceptive systems. They are, therefore, excited by co-operation and repressed by competition. These conditions limit the operation of the expressive sign on each occasion of its employment. The objects indirectly attended to in a

[1] Paul's *Principles of the History of Language* (trans.), pp. 144 ff.

train of conceptual thought are, by mutual apperception, interwoven into the texture of the thought-product. Each expressive sign has power to objectify its associate system only in so far as this system is capable of being incorporated in the conceptual whole which is in process of construction. Hence, the signification of words varies according to the context in which they appear. "When the idea 'man' is present, it is present in some proposition or question, as—'Man is the paragon of animals'; 'In man there is nothing great but mind,' and so on. It is quite clear that in understanding or mentally verifying such statements, very different constituents out of the whole complex 'man' are prominent in each. . . . What is relevant is alone prominent."[1] In sentences like "I never laid a hand upon him"; "John never drew bridle," the hand referred to is not a hand in general, but my hand, the bridle is not a bridle in general, but that which was held by John. Compare such instances as "a good point," "a point of honour," "the bar of an hotel," "the bar of justice," "the tongue of a woman," "the tongue of a balance".[2] Paul uses the terms "*usual* and *occasional* signification, to mark the distinction between the meaning of a word each time that it is employed" and "that which by usage attaches to it considered in itself". This nomenclature is convenient, and I shall make use of it. It must be noticed, however, that the usual signification is, in a certain sense, a fiction. It is, perhaps, not necessary that there should be an identical element of meaning pervading all the applications of a word. Moreover, this common element, in so far as it does exist, cannot be called a *meaning* of the word in the same sense as the occasional signification. When it is disengaged by scientific definition from the various specific applications in which it is implicitly included, it ceases *ipso facto* to be a general meaning, and becomes one occasional meaning among others. The "usual" or "general" signification is not in itself one of the significations borne by a word. It is a condition which circumscribes within more or less vague and shifting limits the divergence of occasional meanings.

The signification of words varies not only with the context, but also with the circumstances under which they are employed. Signs, such as the personal, possessive, and demonstrative pronouns, demonstrative adverbs, &c., have for their general meaning only an extremely abstract form of localisation in respect of place or time. They, therefore, require,

[1] J. Ward, art. "Psychology," *Encycl. Brit.*, xx. 76.

[2] Paul's *Principles of the History of Language*, pp. 73 ff.

on each occasion of their employment, the aid of individualising conditions to give them definiteness. These conditions are supplied by the context, when the demonstrative refers to some other word in the same discourse. They are also often supplied by the general circumstances which determine the universe of discourse. Such demonstratives as *that*, *this*, *there*, *thence*, primarily refer to the content of present perception. *That* tree means, *ceteris paribus*, the most prominent tree in sight. *Here* means the place in which the speaker is; *now*, the time at which he is speaking, and so forth. The defining power of the universe of discourse is also constantly seen in the case of other words besides demonstratives. "Countrymen talk of going to *town* without further specification, meaning thereby the town nearest to where they happen to live." "Suppose that two friends are out walking together, and that they meet a lady previously unknown to either about whom they exchange remarks. They take the same walk on another occasion, and one asks: 'Shall we meet the lady again?' In this case the reference is clear and unmistakable."[1]

All specification of meaning by context or circumstances is due to the competition and co-operation of apperceptive systems. The dominant system which corresponds to the universe of discourse suppresses the activity of those components of the meaning of a word which it is unable to apperceive; and in like manner the meanings of different words limit each other by mutual apperception.

§ 15. *Modification of Meaning by Analogy.* The modification of the meaning of a word by its context is due to its incorporation in a conceptual whole. In so far as the form of this whole is prescribed by a proportional system corresponding to the universe of discourse, all modification of meaning by context is due to proportional production. It results from the controlling influence of a proportional system on the train of ideas as determined by association. From this point of view all modification of meaning by context may be referred to Analogy, *i.e.*, to analogical suggestion. Philologists, it would seem, do not usually give so wide an application to the term Analogy in this connexion. I am, however, unable to discover any precise limits circumscribing their usage, which appears to differ considerably in different writers.[2] There is on the whole a tendency to refer an occasional meaning to analogy when it involves a striking extension of the general

[1] Paul, *loc. cit.*

[2] I do not refer to phonetic analogy.

signification to a class of objects markedly diverse in nature from those to which the word has been previously applied. The author of the proverb "Speech is silvern, but silence is golden," extended the use of words by analogy, because speech and silence have nothing in common with silver and gold except a similar relation in respect of value. It is evident that this restricted use of the term Analogy does not depend on any fundamental psychological distinction. In order to fix the occasional meaning of words, there must always be a prompting cue to set us on "some positive right track". When this cue is supplied by the immediate context we may fairly say that it depends on analogy, for it depends on the interrelation of the meanings of different words in a conceptual whole, constructed according to a plan by analogical suggestion.

In the modification of meaning by mutual apperception, each of the interacting concepts qualifies the other. They unite to form a single object of attention. Hence, in the combination of meanings which accompanies combination of words, not only does what precedes limit and determine what follows, but what follows also limits and determines what precedes.

§ 16. *Permanent Change of Meaning.* Permanent change of meaning arises from the gradual shifting of the limits circumscribing the general significations. This shifting is due to the frequent repetition of the same kind of occasional application. Illustrations are given in abundance in works on language.[1]

§ 17. *The Objective Categories of Grammar.* The subject-predicate relation is not an objective, but a subjective, category. It is a form of the process of thinking, not of the thought-product. Similarly the distinction between interrogative, imperative and assertory sentences is purely subjective. But most grammatical categories are objective. They are general modes of connexion constitutive of the ideal whole produced by those movements of attention which we have called expressive signs. These general modes of connexion are the form, as distinguished from the matter, of conceptual thought. The material constituents of the products of conceptual thinking consist in the representations of special things and activities as expressed by specific verbs and substantives. The formal constituents consist in such relations as that of agent and action, object and activity, thing and quality. In ordinary discourse, form is always

[1] Cp. Paul, *op. cit.*, ch. 4.

the form of a special matter, and as such it is itself specialised. The general meaning which is implicit in all the varying applications of the formal constituents of language becomes explicit only for the scientific grammarian. This general meaning is like that of demonstrative words highly abstract and it is for that reason difficult to disengage it in its purity from its manifold specifications.

The scheme of relations constituted by the formal elements of language becomes the basis of an extremely comprehensive and powerful apperceptive system of the kind which I have called *proportional*. Thus each material element tends to call up by proportional suggestion others related to it according to the general plan of grammatical structure. In such languages as English, the thing and its property or state, the agent and action and object, together with their adjectival and adverbial qualifications, are definitely discriminated by appropriate modes of expression, such as position and inflexion. The apperceptive systems corresponding to these groups of relations may be called *syntactic systems*. In general, the more highly developed a language is the more adequate and unambiguous are the signs of syntactic relation, and the more powerful and persistently operative are the syntactic systems. It is for the philologist to trace the manifold modes and degrees in which grammatical form is expressed and therefore conceived in different languages. We have merely to consider in broad outline the general nature of such variations. It has been proposed to divide all languages into two classes—the formal and the formless. This division as applied to conventional languages perhaps involves the error of confusing difference in degree with difference in kind. But the distinction appears to be justified if we regard it as constituting a line of demarcation between the language of natural signs and the language of conventional signs. Gesture-language may be correctly described as formless. In the following §§ I shall consider it at some length, because of the insight which it affords into the fundamental nature of expressive signs.

§ 18. *Gesture-language.* Gesture-language is, like conventional language, an instrument of conceptual thinking. The natural signs which compose it are either demonstrative or imitative. The demonstrative consist in some way of drawing attention to an object actually present, or to be found in a certain direction. It is obvious that such indications are not expressive signs, unless they form part of a context. This context is supplied by imitative gestures. The imitation consists mainly in tracing the outline of

objects in the air or in copying characteristic features of an action. By copying the act of using a thing or the process of producing it, it is possible to express the thing itself, if context and circumstances exclude ambiguity. Under like conditions, a quality of an absent object may be represented by pointing to a present object possessing a similar quality. Onomatopœia in all its forms must be regarded as a natural sign. It is, if I may be allowed the expression, a phonetic gesture. Reduplication, in its primitive use, ought perhaps to be brought under the same head.

Such pantomime is sufficiently within the power and under the control of the individual subject. Gestures of this kind are moreover intrinsically adapted to serve as expressive signs, because they suggest only certain salient features characterising a class of objects or actions. They are indeed in their own nature concrete and particular. But their concreteness and particularity are of a kind determined by the conditions of their origin, inasmuch as they are bodily movements made by a particular person at a particular time. If these movements themselves were of sufficient interest to attract attention on their own account, they could not fulfil their function as expressive signs. They constitute a language, because, in the context and in the circumstances in which they are used, they derive their interest from their general resemblance in certain respects to things and actions, which are in other and perhaps more essential respects disparate from them and disconnected with them. They are thus by their very nature adapted to become expressive signs, objectifying the apperceptive systems corresponding to the things and actions which they imitate.

A brief account of the mode in which this language is taught to deaf-mutes will be the best means of explaining its nature. I take the following details from Schmalz.[1] The more intelligent deaf-mutes form natural signs spontaneously, if they are not altogether neglected by their fellowmen. At first, however, their gestures are mainly demonstrative. "In order to indicate their wishes and needs they point to the objects in which they are interested if these are present." If the objects are not in sight they fetch them or conduct others to them. The deaf-mute points to a dish or a jug and so indicates his desire for what the dish or jug contains. "If he wants bread he brings the whole loaf together with a knife and he hands both to the person who is to cut a slice for him." Up to this point the gestures of the

[1] *Ueber die Taubstummen*, pp. 267 *seq.*

deaf-mute resemble those of dogs and other intelligent animals. They are not expressive signs in the strict sense. They are, like any others, means for attaining practical ends, and it must be remembered that the relation of means to end is quite disparate from that of the expressive sign to its signification. But cases occur in which devices of the kind described are inadequate. "The deaf-mute, it may be, wants a drink of water; he sees neither water nor drinking glass in the room so that he cannot point to the one nor fetch the other. He takes some one by the hand in order to lead him to the place where the water is. The person to whom this appeal is made refuses to move. The deaf-mute is perplexed and embarrassed. Finally he adopts the device of pointing to his mouth." This is something more than a practical expedient. It is an expressive sign—at least in the germ—such as is not, so far as I know, used by even the most intelligent animals. But the sign is ambiguous. The person addressed may, through a real or pretended misunderstanding, give the deaf-mute something to eat instead of something to drink. He is thus driven to define his meaning by a combination of gestures—a context of natural signs. He directs his hand towards his mouth again; but now he curves it as if it held a glass, at the same time imitating the act of drinking. "At last he makes himself understood, and with the joy of it a ray of light penetrates his intellectual and moral being. This movement, as it were, transforms him into a human being, whereas his previous pointing had been merely animal language. From this time forward he learns to describe absent objects, and he forms for himself a language of natural signs at once betokening and producing a distinctively human power of thought."

"If the deaf-mute does not in good time invent a gesture language for himself, he must be trained to do so. . . . A number of simple objects are laid before him together with copies of them. He is then taught to recognise the copies as such, his attention being alternately directed to the originals and to the imitations. A copy of another object is then brought before his notice, and he is called upon by an interrogative gesture to seek the original. As a rule, he does so. After this exercise has been continued for some time, the articles imitated are removed and only the copies are retained. The teacher fixes his gaze on one of these with a look of interrogation. The deaf-mute seeks for the corresponding object and he is somewhat perplexed because he cannot find it. If he does not himself resort to the expedient of imitating the object by a gesture, the teacher

supplies him with an appropriate sign. In this way he is gradually brought to understand how an absent object may be represented by a mimetic movement."

§ 19. *Gesture-language tends to become Conventional.* The meaning of natural signs, like that of conventional signs, varies according to context and universe of discourse; and such occasional modifications tend to produce lasting changes of general signification. The restrictions and extensions of meaning thus acquired do not depend on the primary connexion between the mimetic sign and what it signifies. They constitute a conventional element in the language of natural signs.

Natural signs also tend to become conventional in another way. There is a strong disposition to abbreviate familiar gestures. The mere hint of a movement, so to speak, comes to be substituted for the movement itself, so that a bystander who has not made a special study of gesture language is totally unable to divine the meaning of the signs used. In this way the natural pantomime of deaf-mutes tends to become in some degree conventional. It would seem however that the deaf-mute rarely loses sight altogether of the natural connexion between sign and signification. He is able, if required, to act out in detail his abbreviated gestures. Until he is taught a conventional language, he cannot entirely dissociate the notion of a sign from the imitation of some feature or adjunct of the thing signified. It must be understood that what follows in § 20 on the limitations of gesture-language is intended to apply to it only in so far as it is truly mimetic, and not to the conventional elements which become intermixed with the imitative gestures.

§ 20. *Limitations of Gesture-language.* The language of gestures is, as we have seen, a true instrument of conceptual thinking. It objectifies mental systems, which by mutual apperception unite to form a conceptual whole. I cannot, therefore, agree with the view of Mr. Romanes, that it is the natural expression of the "logic of recepts" as opposed to the logic of concepts. On the other hand, it must be admitted that the conceptual thinking of which natural signs are the medium is only of a rudimentary character. Mimetic gestures can represent things and processes only by imitating the broad features of their sensible appearance and especially of their appearance to the eye. Hence they are, in comparison with conventional signs, very deficient both in generality and in power of specification. The more closely objects resemble each other, the more difficult it is to

express their differentiating characteristics by imitative movements. In order to distinguish closely allied species of the same genus, it is often necessary to have recourse to a cumbrous accumulation of gestures, where in conventional language a single brief and simple sign would more efficiently fulfil the same function. Thus the sign for a *stocking* must usually include an imitation of the act of knitting, as the mere representation of its shape and the act of drawing it on to the foot, would be ambiguous. It might equally well stand for a boot. This want of specifying power, which is inherent in the nature of gesture-language, of itself involves a corresponding deficiency in power of generalisation. The concept of a genus is more fully developed in proportion as its special sub-concepts are more definitely distinguished from it and from each other. Hence the difficulty of specifying by means of mimetic signs is at the same time a hindrance to the process of generalisation. A still more important limitation is that imitative gestures can only express that kind of generality which consists in or is conjoined with the resemblance of objects in their appearance to the senses. Hence concepts of a high degree of abstractness cannot be represented at all by mimetic signs or can only be so represented in an indistinct, cumbrous and inadequate way. "The more general determinations of magnitude, such as broad, narrow, long, short, thick, thin, high, low, cannot be accurately expressed; the most that can be done is to teach the deaf-mute signs, which are suitable in the largest proportion of cases."[1] It is obvious that such concepts as causality, reciprocity, teleology, development, state, condition, &c., can hardly be expressed at all by imitative gestures. Broadly speaking, natural signs are capable of objectifying universals comprehending particular images as their subordinate elements; but they can only to a very limited extent objectify universals having other universals as their subordinate elements. The thinking which depends on gesture-language may apprehend concepts; but it can scarcely apprehend a conceptual system embracing a multiplicity of conceptual components, which are co-ordinated with each other and subordinated to each other according to a scheme of classification. It follows that trains of thought which depend purely on natural signs cannot be sustained and continuous. The proportional systems on which they are based are not sufficiently complex and comprehensive to make possible persistent and strenuous intellectual effort. Hence deaf-mutes

[1] Schmalz, *op. cit.*

who have not been made familiar with conventional language display a marked incapacity for disciplined thinking. With them the flow of ideas is predominantly determined by casual associations and by momentary surroundings. Hence they display a peculiar kind of restlessness; not having resources within themselves, they are perpetually seeking the excitement of new impressions from without.

§ 21. *Formlessness of Gesture-language.* The impossibility of giving any adequate expression to abstract relation by means of mimetic gestures includes the impossibility of giving any adequate expression to the objective categories of grammar. The language of natural signs is essentially formless. "The gesture language has no grammar properly so called. . . . The same sign stands for 'walk,' 'walks,' 'walking,' 'walked,' 'walker.' Adjectives and verbs are not easily distinguished by the deaf and dumb. . . . Indeed our elaborate system of parts of speech is but little applicable to the gesture-language."[1] The same gesture may stand at once for act, agent, object and instrument. Thus a movement imitative of digging may equally well signify the digger, the spade, the hole dug, or the act itself. It is associated with the whole complex including the act and all the objects obviously implicated in the act. It is restricted in its signification only by context and by universe of discourse. To remove such ambiguity, conventional elements are sometimes introduced into gesture-language. Thus a deaf-mute may be taught to describe a circle with both hands in the air in order to show that he refers to a thing, and to move one hand to and fro in order to show that he is thinking about a quality. This is, of course, a purely conventional arrangement.

The language of natural signs is fully adequate to the expression of varying subjective attitudes, as distinguished from the objective categories of grammar. It is easy to distinguish interrogation, command, and assertion by means of appropriate gestures. The order in which gestures are made to follow one another seems mainly to depend on the comparative interest felt by the speaker in the objects referred to. What is most important comes first. In this respect, gesture-language is strongly contrasted with those conventional languages, which, like Chinese, use the order of words almost exclusively as a means of expressing objective distinctions.

§ 22. *The Varieties of Conventional Language.* Conventional signs, being free from the necessary limitations of

[1] Tylor's *Early History of Mankind*, p. 24.

natural signs, are capable of expressing adequately and accurately the most specific and the most abstract concepts. Actual languages, however, realise this ideal in varying degrees. The significant speech of children belongs at the outset to the same stage of intellectual development as the language of gestures. "Baba" does not signify to the child what the verb "to sleep" signifies to us. It expresses the whole unanalysed complex of things, persons, and actions connected with sleeping, including the nurse, the cradle, the cushion and so forth. Steinthal tells us that a child of his spontaneously invented the word *'dlil*, when he saw a street-lamp kindled. Another time he caught sight of the man coming with his ladder to dress the lamp. The child recognised him in the distance and again cried *'dlil*. Soon afterwards he learned to say *lich* and even *licht*. Six weeks after the incident narrated, he exclaimed *lich* on seeing in daylight the apparatus for dressing the lamps. The first sentences formed by children are, as might be expected, without grammatical form. Steinthal gives some very good examples from his own observations. Among these are "Papa hat" = "Papa has a hat on," and "Mama baba" = "I will sleep with mama".

Between such mere juxtaposition of words, which are not yet differentiated into "parts of speech" and the grammatical structure of a highly developed language there are manifold intermediate gradations. Power to express grammatical form depends on the power to express abstract relations in general. But in this respect the languages of many savage tribes scarcely attain to the level of a well developed gesture-language. "The Tasmanians, when they wanted to denote what we mean by 'tall' and 'round,' had to say 'long legs' and 'like a ball' or the 'moon' or some other round object, eking out their scanty vocabulary by means of gesture. So, too, the New Caledonians cannot be brought to understand such ideas as those conveyed by *yesterday* and *to-morrow*." On the other hand, such languages are distinctly superior to gesture-language in power of specification, although they hardly attain to the same degree of generalisation. "The Mohicans have words for cutting various objects, but none to convey cutting simply; and the Society Islanders can talk of a dog's tail, a sheep's tail or a man's tail, but not of tail itself. . . . According to Milligan the aborigines of Tasmania had 'no words representing abstract ideas; for each variety of gum-tree and wattle-tree, &c., &c., they had a name, but they had no equivalent for the expression, a tree; neither could they express abstract qualities: such as

hard, soft, warm, cold, long, short, round '." [1] It thus appears that even the rudest conventional languages possess a power of discrimination which cannot be attained by natural signs. It must be noticed, however, that this multiplication of distinctions does not involve any organisation of concepts in a system. There is, properly speaking, no conception of the species as such where there is no conception of the genus as such.

The fundamental differences between various languages, considered as embodiments of thought and instruments of thinking, are best shown by their differences in grammatical structure. In this respect the polysynthetic languages of North America closely resemble a well developed language of natural signs. "Polysynthesism or incapsulation may be defined as the fusion of the several parts of a sentence into a single word, the single words composing it being reduced to their simplest elements. It is in fact the undeveloped sentence of primitive speech, out of which the various forms of grammar and the manifold words of the lexicon were ultimately to arise." "In Cheroki, for instance, *nad-hol-i-nin* means 'bring us the boat,' from *naten*, 'to bring,' *amokhol*, 'boat,' and *nin*, 'us'." [2] In many languages, including the polysynthetic, there is no clear distinction between noun and verb. For the verb is substituted a noun denoting an action, and the connexion of the action with the agent from which it originates or the object in which it terminates is expressed by simple juxtaposition, by the possessive pronoun, or by some other adnominal form. Thus, in sentences quoted by H. Winkler from Pokenchi: "Thou thy seeing" = "Thou seest"; "His scratching his head" = "He scratches his head"; "I his biting" = "He bites me". In Dayak according to Steinthal such sentences as the following are typical:—"Boat this boat of his choice" = "This is the boat he has chosen"; "Witness two these which thy desire" = "Which of these two witnesses desirest thou?"

It is possible for even prepositions and pronouns to be expressed adnominally. Thus in Pokenchi:—"Mouth my face" = "In front of my face" = "In front of me"; "Mouth my head" = "On me"; "Mouth my back" = "Behind me"; "On-our-one-side-that-(of) us" = "We all".

Concord is a remarkable grammatical form characteristic of inflectional languages. It expresses the mutual determination of meaning which is involved in the apperception of the concept of an action by the concept of the agent, or of the concept of a quality by the concept of the thing

[1] Sayce, *Science of Language*, i. 101 ff., ii. 5 ff.

[2] Sayce, *op. cit.* ii. 216.

which it qualifies. Number and gender are important grammatical forms mainly because they furnish a means of expressing this relation by means of concord. The agreement in gender and number of the adjective with its substantive, the agreement in number and person of the verb with its nominative is an expression of the general form of connexion which is involved in the synthesis of the concepts of action and agent or of thing and property. The nature of this relation has been already discussed in § 8.

The importance of grammatical form consists in the pervasive and persistent control which it exercises on the course of thought. Conceptual thinking is everywhere moulded by the analogical systems which correspond to the schema of relations expressed by the general morphological structure of a language. A language which is penetrated through and through by adnominal form, so that it has no true verb and no true distinction of agent and object, embodies a mode of thinking distinct in kind from that which is mediated by Greek or English.[1]

§ 23. *Conclusion.* I have in this article endeavoured to give an exposition of the nature of language considered in its relation to thought, avoiding detailed discussion except in so far as it was necessary in order to illustrate and support my general views. For the sake of clearness, I have as much as possible avoided the other aspects in which language can be regarded. Thus I have purposely omitted to notice the interesting problems connected with the varying nature of the sensory material employed by different individuals in inward discourse—problems which have been so ably treated by M. Ballet in his work *Le Langage Intérieure.* For a similar reason, all reference has been as far as possible avoided to the use of language as a means of communication. I have treated it as a means by which a man is enabled to understand himself, not as a means by which he makes others understand him. Doubtless the genesis and evolution of language is possible only through social intercourse; but it seems to me legitimate to consider separately the operation of language in the individual mind as an instrument of conceptual thinking. On the present occasion I have confined myself to this problem alone.[2]

[1] Cp. Sayce, *op. cit.* i. 129, 378; and the Introduction to Steinthal's *Charakteristik der hauptsächlichsten Typen des Sprachbaues.*

[2] I am deeply indebted to Steinthal for the stimulus and help which I have received from the study of his work on language. We differ, however, fundamentally inasmuch as he uses only one principle of explanation, where I use two. He makes apperception alone do the work, which I refer to apperception and Attention in intimate co-operation.

III.—THE NATURE OF CONSCIOUSNESS.

By Alexander F. Shand.

§ 1. *Statement of the problem.* To know fully the nature of anything is to know how it has become; how it changes; what it does; and what it is. We often interpret the last kind of knowledge so as to involve the other kinds; but we must remember that a thing has, ordinarily, a distinguishable and common nature apart from its effects on other things, or theirs upon it. In this sense I have already tried to show what is a common transcendent judgment (Mind, No. 59, "The Antinomy of Thought"). I considered its nature apart from the question of its origin,—for this is a psychological question; apart from the question of its validity,—for this is metaphysical. I regarded it not as *doing* anything for its object—as universalising or defining its object—but as incapable of such action. I considered it merely as it is—as a reality in consciousness—and sought to show, through a struggle with persistent contradictions, how we must interpret its nature so as to escape from them. Here, too, I shall only consider what consciousness is, and put aside all question of its origin. But we shall perhaps find, in distinction from the last case, that what it is cannot be separated from what it does—that it always affects its object, and that this affection belongs inseparably to its unique nature.

For the purpose of our enquiry, we must abstract consciousness from its union with other acts; but our isolation of it can never become absolute. Were this possible, we should reach a thing-in-itself out of all relation to other things, and such a thing would have no nature left to investigate. The act of being conscious has a certain identity with other acts; and also a difference from them. It is from the point of view of these relations that we have to consider consciousness; and we shall find in comparing it with the transcendent judgment, that both its unique and common nature will best be brought to light.

§ 2. *The transcendent and immanent judgments.* I mean by a transcendent judgment, one that transcends what the subject judging is conscious of or one that transcends what is presented to its subject. I mean by an immanent judgment, one that judges what the subject judging is conscious

of or one that deals only with what is presented to its subject. About the reality of the first class of judgments there can be no question. We have clear instances of them in our judgments about the reality and contents of other minds. But the second class of judgments are called in question, for it seems "senseless" to affirm what is thus "given".[1] On ordinary occasions we should not, indeed, think of *expressing* such judgments; but expression in language is not necessary to constitute judgment. In philosophy, too, there arise occasions when we need to express these judgments, in order to study them;—and we can express them. I can affirm that two colours or sounds coexist and are different from one another. But, even where they are unexpressed, we must still hold them to be implicitly present. Undoubtedly there is something present which makes all judgments impossible that are opposed to its silent affirmation. What is presented to me, that I cannot contradict. And when I express my relation to this presentation in a proposition, I recognise the unmistakable presence of a judgment. Do we then maintain that the character of my relation changed at the moment of expression, and that, from something else, language transformed it into a judgment? It would be hard to answer this question in the affirmative. But we need only admit for our present purpose that this judgment may occur, however artificial it seem. And, lastly, we shall feel less objection to regarding this something as a judgment, if we realise that it is an abstraction. In our ordinary concrete experience, it is a mere element of a larger judgment that deals not merely with what is presented, but that also transcends presentation —a complex judgment which is both immanent and transcendent. But when we isolate the immanent element—and this we shall come to see later—it becomes a judgment, and nothing less. We cannot get beneath judgment, nor resolve its act into simpler components.

§ 3. *If consciousness is a judgment, it is an immanent judgment.* We are convinced that consciousness is a kind of knowledge, and since all knowledge has the form of a judgment, it follows that consciousness is a judgment or complex of judgments. If it is a judgment, it can be no other than the immanent judgment. For all judgments either transcend consciousness in respect of their object, or find their objects in consciousness. But consciousness finds its object in itself, it cannot therefore be a transcendent

[1] F. H. Bradley. *The Principles of Logic*, p. 16.

judgment. It follows that if consciousness is a judgment, it is a judgment whose object is found in consciousness.

§ 4. *Consciousness indefinable in the ordinary sense.* If the hypothetical conclusion of the last paragraph be taken as a definition, it is open to the obvious criticism that it uses the term consciousness to explain the *differentia* of consciousness. The definition would be therefore circular. But it is recognised that, when we are dealing with the ultimate constituents of things, we cannot give correct definitions. A simple difference cannot be reduced to simpler differences : and a simple difference involves a simple quality. If, then, the act of being conscious is simple, we can only express what that is which makes it different from other acts by using the same term again or one that is synonymous. Thus we might have put our conclusion in the following form in which its circular character would not have been obvious : If consciousness is a judgment, it is an intuitive judgment. But were we called upon to explain intuitive, we should sooner or later be forced to use the term consciousness, because the act of being conscious is simple. Nothing, again, is commoner than to find explanations of judgment which conceal their own circular character by employment of synonymous terms. Thus, judgment we are told 'expresses' some relation, or 'refers' an ideal content to reality. But we cannot help ourselves, for it is as impossible to define Judgment as Consciousness. I have meant to acknowledge this openly by using the same term 'consciousness' over again in the above statement about consciousness rather than one that is synonymous.

But what is the use of a statement which explains nothing, and which becomes ridiculous if it is expanded? To say that consciousness is a judgment whose object is found in consciousness, means that it is a judgment whose object is found in a judgment whose object is found in a judgment whose object is found in a judgment . . . , and, like a recurring decimal, our statement repeats itself without end. Now we may give genuine information by such statements if we do not take them for explanations or definitions in the ordinary sense. To say that consciousness is a judgment is to state the *genus* of consciousness, and we can go on to state its *differentia* to be a judgment whose object is united to itself and found in itself. But if we try to explain this difference—if we try to reduce it to simpler differences—if we will not accept it as ultimate, then we offer, instead of an intelligible statement, an explanation which explains nothing, and a little criticism will discover its absurdity. Thus our object in

using synonyms and synonymous phrases to express the *differentia* of consciousness must be merely to suggest this difference to the reader, but never to explain it.

§ 5. *The two questions: What is the nature of consciousness? and, What should be the meaning of the word?* We have seen that as the act of being conscious is simple, we cannot define it in the ordinary sense of the word 'define'. But we can still define it in a broader sense—we can set a limit to its meaning. For to do so we need only see clearly what it is and mark its difference from other meanings. In defining a complex unity, we set out its complex difference, or a part of it; in defining a simple unity, we set out its simple difference. Precision in the meaning of a word, consistency in the use of it—the purpose of definition—may be as well attained in the one case as in the other. Now, to define the abstract term 'consciousness' is to say not what is, but what ought to be the meaning of the word. The abstract meaning of the word is ambiguous, vague, and fluctuating. The statement of this confused medley of meanings is not a definition of the word, but we define it when we reduce them to the clear and self-consistent meaning which the word ought to have.

But this is only one of our questions. We enquire also, What is the nature of that which is called consciousness? Thus our ignorance of the thing consciousness, and the confused meaning of the word, are the sources of our two questions. The word does not definitely suggest the meaning which it stands for; the thing is not clearly understood, hence the indefiniteness of the word. When the general nature of the thing is clear to us, the meaning of the word as it should be will become clear also. The definition of the word consciousness is nothing less than a statement of the general nature of the reality which we name consciousness. For the definition of the word is the meaning which it ought to bear: the meaning which it ought to bear, in distinction from the meaning or meanings which it does bear, is the meaning which can be predicated of the extension of the word, of the whole of it if possible, and no more than the whole of it: the meaning which can be predicated of the whole extension, and no more than the whole, is the meaning which every individual possesses in common with every other individual of the whole, and that which distinguishes this class of individuals from every other class: that which an individual possesses in common with a class of individuals is its general nature, or a part of its general nature, which is also its distinctive nature when it distinguishes this class

from every other class; it follows that *the* definition of a word is a true statement of the general and distinctive nature of the class which it denotes. Thus we conclude that the two questions of the paragraph are the same question differently expressed. We cannot, as Mill would have us, make the definition of the word consciousness merely verbal, unless we put out of our thoughts the nature of the extension, and concern ourselves only with the word. Then we give a definition which is neither true nor false but temporally useful, or correct as embodying what people mean by the word.

§ 6. *The basis and presupposition of the question.* The question—What should be *the* meaning of the word, Consciousness?—implies by its use of the definite article that we do not wish to have an arbitrary meaning, but the proper or objective meaning, of the word. The possibility of an objective meaning presupposes that some connexion is already established between the word, consciousness, and the reality. This connexion is between the word and its extension. This we presuppose; and from this extension we start in our endeavour to give an objective meaning to the word. We have but a vague and unsteady conception of consciousness, but there are innumerable concrete acts which constitute its extension. Expressed in their usual personal form, they appear as the propositions—I am conscious of *a;* or I am conscious of *a* as different from *b*, or as related in some other way to *b*. Now, it would seem that as we are to draw our meaning from the extension, so we must return to it to see if our meaning is in agreement with it. But here a difficulty occurs. The extension can only be a test of our meaning, if it be self-consistent—if a meaning can be given to it which includes the whole of it and no more. But if it be judged to be inconsistent, it has been already tested by this and other meanings. Thus each seems to be a test of the other; but the ultimate test lies in the extension. For if we affirm that the extension has a plurality of meanings, or that these meanings require both a larger and smaller extension at once, then this judgment of its meanings must be verified by reference to the extension. If verified, a part of the extension must be cut off, carrying with it its implied meaning, or the extension must be enlarged. Then we start afresh from this new extension to state its meaning. This judgment of its meaning, like the previous judgment of a plurality of meanings or no distinctive meaning, must be tested by the extension, and, if out of harmony with it, must be modified or rejected,

unless it can be shown that there be still some inconsistency in the extension. Thus we are aware that the extension of the term 'judgment' is inconsistent, and is wider in Logic than in daily life, where by a man's judgment is meant the *conclusions* he reaches about various practical matters, whereas in Logic we include more than such discursive thought. The larger extension then includes what the smaller excludes, and one or other must be modified. The extension of the term Consciousness, too, may be coextensive with knowledge, or be confined, as is usual in philosophy, to immediate or intuitive knowledge; but it cannot have both extensions. However, I do not think we shall find serious inconsistency in the extension of these highly abstract terms, but such as there is is easy to detect.

§ 7. *Difficult to say precisely of what we are conscious.* In starting from the extension of consciousness, the acts or states of being conscious, it is hard to say of what I am conscious. Let us take an instance. The transcendent judgment which affirms a thought in the mind of another is accompanied by a representation of that thought in the mind which judges it. Suppose that the thought be that of a person in a room, and that I, being aware of this, represent them in my own consciousness. This representation is the image of a man in the image of a room, which we may symbolise by *a* and *b* respectively. Am I conscious of this representation? It seems that I am. But what and how much is the representation or image? Each of the two images is conceived as belonging to a definite class of images. The one belongs to the class of man-images, the other to the class of room-images. These classes are not presented to me—I am not conscious of them—though some members of them I may be. The implied judgment of a community of character between *a* and *b* and these classes respectively is then a transcendent judgment and not an act of consciousness. Let us then try to lay aside both the representative character of *a* and *b* and their reference to classes. Are we not at least conscious of two coloured extensions, *a* and *b*, now imaged before me? We have still not excluded all class-judgments. For inasmuch as "two," "coloured," "extensions," are general terms, they all imply judgments which transcend the mere images *a* and *b* presented, and affirm them to be one in certain respects with classes of objects not presented. For the same reason I cannot even say that I am conscious of two visual sensations *a* and *b* as different from one another. But the difficulty is more seeming than real. It illustrates the

intimate connexion between the diverse elements of our knowledge—an act of consciousness on the one side, on the other a transcendent judgment. It shows how impossible it is to *express* that of which we are conscious without implying also that of which we are not conscious. Our words force us into verbal contradictions; but our thoughts need not be contradictory. It is certain that we are conscious of something, as it is certain that we transcend that something. The first cannot be resolved into the last any more than the last can be resolved into the first. It is very obvious that, unless the act of being conscious tells me what this something is of which I am conscious, no other act can succeed where it fails. And when I carefully distinguish between the act of being conscious and the transcendent acts combined with it, that which I am conscious of in the present instance is clear to me. I am conscious of two images *a* and *b;* I am conscious that the one is different from the other, and that the one is contained or visualised in the other. What other relations there are of which I am also conscious we need not stop to consider; but I am not conscious of those relations which I inevitably imply to exist between these images and the objects they represent, and the classes to which these images are referred. I judge those relations, but I am not conscious of them, though my language contradicts me and asserts that I am conscious of them. And the reason is that we have here to do with an unity of acts which cannot be separated, but only distinguished; and which distinction our language is not sufficiently subtle to express.

§ 8. *What follows from assuming consciousness to be different from judgment.* I am conscious that *a* is different from, and in, *b*. Let us abstract from the transcendent judgments with which this act of consciousness is combined. Now, we have seen that there is a judgment, or at least the possibility of a judgment, concerned with these very images *a* and *b* of which I am conscious. And the question is, whether this act of being conscious of *a* and *b* be different from this act of judging *a* and *b*. We feel an opposition to identifying them. The first seems an altogether unique act different from any judgment. But, on the other hand, if the two acts are different, how curious that we should use the same language to express both. '*a* is different from and in *b*' is the natural expression of my present act of being conscious: it is also a proposition which expresses my judgment. But let us at all events assume, that the act of being conscious of *a* and *b* is different from the act of judging *a* and *b*; and watch

what follows from the assumption. In the first place, the act of being conscious is not a judgment about its object, nor has the act of judging a consciousness of *its* object. This judgment, like the transcendent judgment, is a mere judging-about-*a*-and-*b*,[1] and does not contain them, nor the relations between them; for to contain them is to be conscious of them. And since this judgment does not contain the reality of its object, it is different from consciousness in this respect, that the latter, in its presentation of *a* and *b*, does contain the reality of *its* object. Thus consciousness contains the object of the judgment, for the same *a* and *b* is the object of both acts. Further consciousness not only contains the object of the judgment, but the judgment itself. And that which distinguishes them always is, that consciousness never fails to contain reality, and judgment never succeeds in containing it. There is also this difference between them, that the one casts upon its objects a varying intensity, while the other judges about *its* objects with a varying certainty. Lastly there is the difference, that consciousness not only contains, but is a condition of the reality of its objects—for consciousness must be held to be a condition of what is real for consciousness—while judgment comes no nearer to reality than judging about it. Passing from difference to other relations, we may note the following strange interplay of the two functions. Each function makes an object of the other. For, when I am conscious of *a* and *b*, I can judge reflectively that I am conscious of them: and when I judge them, I can attain to a consciousness of my judgment. Now the act of judging *a* and *b* is an act of knowledge—if we regard it as true and not false: but the act of being conscious of them is not an act of knowledge, otherwise it would be a judgment. Thus knowledge can never absorb the function of consciousness, so as to become merged in it. Knowledge can never do what consciousness does with the object—hold the unmistakable, unerring, reality within its act. And thus its act is always the same in the respect that it remains transcendent, and never attains to an intuition of its object. But consciousness does attain to an intuition of this very object; yet its act is blind—we must call it a blind intuition. For, though we have knowledge, and judge about this act which is blind in itself, judgment cannot take this act bodily up into its own act so as to become itself intuitive, but remains judging about this act transcendentally without ever containing it. We must now sum up our conclusions. Our

[1] MIND No 59, "The Antinomy of Thought," p. 366.

first is, that Consciousness is never an act of Knowledge; and since, in the common meaning of the word, consciousness implies knowledge, we must hold that the common meaning is complex and confuses two radically different functions. Our second and last conclusion is, that Knowledge and Judgment are of one character in the respect that they never become intuitive.

§ 9. *Consciousness shown to be an intuitive judgment.* When we attempt to carry out the above conclusions we are forced to contradict ourselves. On the one hand, that distinction between intuitive and all other knowledge cannot be abolished: on the other, it is quite impossible to maintain that, in so far as I am conscious of an object, I am unconscious of it. Yet this is what follows from our conclusion that consciousness has itself no knowledge of its object. A knowledge of its object there may indeed be accompanying consciousness; but this knowledge is transcendent. The only knowledge forbidden is that which consciousness claims exclusively to possess, and which is suggested by the word itself. Thus in so far as I am conscious of an object, I am unconscious of it, whatever other knowledge I have of it. Now, if it were possible to alter the nature of the act so that it should not be an act of knowledge, we could escape the contradiction. In fact the contradiction shows us that this is what we cannot do, that whatever the act of being conscious be, and however different from all other acts, that unique act must be an act of knowledge. Let us then accept this alternative, and endeavour to explicate its consequences.

Now, since the very act of being conscious is an act of knowledge, this knowledge is different from all transcendent knowledge in that it embraces or contains the reality—its object, and so far produces that reality, as consciousness is a condition of what is real for consciousness. Consciousness, in other words, implies an intuition of its object, an intuition that it is instrumental in effecting. Now, if we consider our former images, *a* and *b*, and this intuitive knowledge of them, we shall find there is still, for all difference, that function of knowledge that was revealed in the Transcendent Judgment —the affirming of reality, here the affirming-of-*a*-and-*b*-as-different-from-one-another. We saw (§ 2) that this judgment, useless as it seems, was at least a possibility; now we see that it not only may, but must occur, wherever consciousness be. For consciousness is an act of knowledge, and therefore an act of judgment; and inasmuch as I am conscious of *a* and *b* as different from one another, and co-existent, I judge them to be different and co-existent, although this

judgment be unexpressed. Now, directly we admit that consciousness is this judging of reality, we discover an identical essence common to it and the transcendent judgment which likewise is the judging-of-some-reality. And this discernment of a common quality tends to draw us back to our former supposition, that consciousness contains two different functions. For if there be, both in it and the transcendent judgment, a judging of reality, must we not refer that production of reality, or part-production which consciousness implies, to some other function than judgment? To make consciousness more than a mere judgment—to make it assume its own peculiar character—some fresh factor must surely be added to it, a factor the difference of which from judgment we see in this its part-production of reality. Thus we shall end in our former conclusion that the act of being conscious is complex, and that its unique act of being conscious is not an act of knowledge, while the knowledge involved with it is of the usual sort which fails to contain its object. This opposition of general and singular which we have thus set up in consciousness is a fallacy which Lotze has well explained. Wherever we reach the general, we find it hard not to oppose it to the particular. We take the general as a "*prius*"[1] to which the various concrete instances attach themselves. As the general will not explain the unique and individual nature of reality, we suppose that some other influence must co-operate with it. Thus we take the abstract form of the categoric judgment as a *prius*, and to reach the individual nature of consciousness we have to call to our aid another and different function. But it does not follow that there are two functions in consciousness, because an abstract form of judgment fails to give a complete interpretation of its nature. Wherever there is individuality there is difference between the individual and the type it individualises, which occurs without destroying its unity. What judgments could be more peculiar than the Hypothetic, Disjunctive, and Problematic? The first seems to be ever trying to become judgment rather than to be judgment. An arresting power lies in the 'if,' which restrains the protasis from becoming judgment, and likewise holds the apodosis in suspense till the protasis is freed. Shall we then conclude there are two functions at work—the one a judgment, the other a strange function which neutralises the first. Or again, let us consider the Disjunctive Judgment, which remains in eternal suspense between

[1] Lotze, *Metaphysic*, bk. i, §§ 35,6.

two relations and affirms neither: or the Problematic Judgment, which is infected throughout with uncertainty. Are we to suppose that the uniqueness of these judgments is brought about through some other function than judgment? We must rather hold that the function in each case is one, and nothing besides its own unique act of judging; that we have brought to the interpretation of these types of judging the abstract form of judgment in general which has been reached by abstraction from their differences; and then we are surprised not to find the very differences we have abstracted and expect some other function to supply them. Thus we have to overcome this prejudice with regard to consciousness. We must regard its function as none other than an act of knowledge, something more, indeed, than an act of knowledge in the abstract, but nothing more than its own unique act of knowledge. But as often as we regard consciousness as possessing the form of knowledge or judgment in general, we shall be disposed to think that some function different from knowledge must combine with knowledge to produce consciousness. Or if it were true that "abstract universals" were a real *prius* subsisting as an eternal "archetype" of all the changing variety of sense, then we should have to set some other function to work in order to produce out of this phantom "world of ideas" the real world of experience. Thus the act which consciousness implies is not a complex act, but an altogether simple and unique act. But, lastly, we shall be prone to deny this again when we compare intuitive knowledge with other knowledge and try to express the difference. For we cannot express it otherwise than in some such phrase as—that all other knowledge knows reality indeed categorically or problematically, but this knowledge alone contains the very reality that it knows; and this inevitably suggests that the act of containing is different from the act of knowing.

§ 10. *What is the meaning of reality in consciousness?* I am conscious of *a* and *b* as real. In what sense am I conscious of their reality? *a* and *b* I suppose are the present appearances of realities that continue under some form when I am no longer conscious of them. But I am clearly not conscious of this continuing reality. I am only conscious of their reality in consciousness. This again is ambiguous. Reality in consciousness may mean what is a fact of its past history or of its unaccomplished future, but if so it is not anything of which I *am* conscious, but something of which I *was* or *will* be conscious. That *a* and *b* are real in my consciousness

does not mean that a persistent reality underlies them, nor that they are real in past or future, but merely that I am conscious of *a* and *b* as real. And this reality is not anything above or beside *a* and *b* themselves. It is none other than these very images. Thus reality in consciousness means no more than presentation. Of any other reality, belonging to the images, I am not conscious. The universal nature of reality which is predicated of *a* and *b* draws these images into unity with all things, but of this I am not conscious: I cannot do more than transcendentally judge it. So, again, I mean nothing more by containing this reality than that I am conscious of it. The verb, 'to contain,' sometimes better suggests the difference between the act of consciousness and other acts of judgment; and this is all that I intend by using it and not to resolve this difference into anything simpler (§ 4).

§ 11. *Is the act the same as the object of consciousness?* I am conscious of *a* and *b*. Here is suggested an opposition like that of general and singular which we have just criticised. For the act of being conscious—the 'I am conscious'—seems abstract, universal, and persistent: and the object seems concrete, individual, and changeable. The concrete *a* and *b* give place to *c* and *d*, and *c* and *d* to others. And so we separate them and put on the one side a pure identical essence, on the other a variable object. Is not this the old mistake of hypostatising an abstraction and supposing it becomes concrete by the action of another element? This my consciousness is not abstract but concrete, inasmuch as I am conscious of *a* and *b* and not of a mere object in general. Is it then anything different from *a* and *b*; is it not these very images? Is not the belief that it is something which faces these images, distinct from them, as steadfast compared with their ceaseless flux as the bank to the river which flows beside it, is not this due, in the first place, to the recognition that, throughout the variety of objects which pass before me, there is something always the same; and, in the second place, to the setting up of this unity underlying the object as a subject—a reality behind and distinct from the flow of its object? Let us then suppose that the act of being conscious is no such reality. There are three ways in which we may regard it as identical with its object.

§ 12. *The supposition that the act of being conscious is the same as its individual object, ends in contradictions.* Let us take an instance. I question whether S is P. I am conscious of this act of questioning; it follows that this act of being conscious is the same as this act of questioning. Again, this

act of being conscious is a judgment (§ 9); therefore a judgment and its opposite—a question—are the same reality. Now, though every question involves a judgment —for, without some basis of, at least, tacit affirmation, no question can be put—yet, wherein it is a question, therein it is an opposite of judgment. Lastly, it follows that this question is identical, not only with a judgment, but with an immanent judgment. Now it is easy to show that on theory a question is always transcendent, never immanent, and on practical grounds that a question is never put when its answer is already given in intuition. If then a question could by any possibility be a judgment, it would be a transcendent judgment. These contradictions can be added to by taking fresh cases. Suppose that I am conscious of a problematic or disjunctive judgment, my consciousness, inasmuch as it is an intuitive, is a categorical judgment; and this categorical judgment I must identify with the disjunctive or problematic judgment which is its object. But the difference between them cannot be overcome, nor can such an identity accompany it. This intuitive and categorical judgment is neither vexed by doubt nor by an alternative which it cannot overcome.

Lastly, the final result of identifying my act of being conscious with the individual object of which I am conscious is the denial that there is any difference in the mode of my activity. Not only are all judgments, so far as they are contained in consciousness, reduced to one type of the intuitive and categorical, but every feeling of pleasure or pain, every act of will or desire, so far as I am conscious of it, is identical with the same intuitive act, and all are without difference among themselves. But, inasmuch as these differences will still break out in spite of our efforts to efface them, the assumption from which we started must be considered as refuted.

§ 13. *Supposition that the act of being conscious is its collective aggregate of objects, ends in contradictions.* As the act of being conscious is not the individual object of which I am conscious, neither is it the sum of all the objects of which I am conscious. For if my act of being conscious is no one of the objects which make up the total number presented to me, the fact that these objects are now taken collectively instead of singly will not prevent similar contradictions arising to the former. The impossibility of identifying an intuitive judgment with a question will not be lessened because we throw in also a problematic or disjunctive act and various qualitatively different sensations. Our conclusion would

then be that the act of being conscious is partly interrogative, partly disjunctive or problematic, and partly sensational. But the act of intuitively judging has no part of its intuitive act interrogative, or disjunctive, or problematic. Throughout, it is assertive, and not interrogative; immanent, and not transcendent; decisive, and not halting between alternatives; categorical, and not problematic.

Lastly, the contradiction will not be a whit diminished by adding to the aggregate of present objects those which have been or which will be presented.

The conclusion of this and the last paragraph is a generalisation from a few cases. Inasmuch as there are certain cases—cases of reflective knowledge—where we fall into obvious contradiction through identifying the act of being conscious with its object, we must hold that the act is different from its object in all cases. Otherwise we should have to resolve the act into its object in those cases where no obvious contradiction followed, and reinstate the act in others where it did;—a wholly gratuitous assumption, and one which must regard the same persistent act as now one thing, now entirely different, merely because our capricious thought will have it so.

§ 14. *Supposition that the act of being conscious is some permanent quality or relation abstracted from its object ends likewise in contradiction.* As we cannot explain my act of being conscious as the concrete objects of which I am conscious, individually or collectively, we may think, inasmuch as the act seems changeless, abstract and identical at all times, that there is more probability about our present assumption that the act is some quality or relation implied in presentations. Thus, as compared with our former assumption, we gain a persistent element, and, further, we need no longer identify the act with the whole of its object. The act, we suppose, is a universal;—either a relation—a unity of the manifold—or some quality of the manifold which confers on it a persistent identity;—its object, on the other hand, is both this universal and this singular changeable element to which it is united. Our problem now is, to abstract from the objects presented the act of intuitively judging. Let us return to the same instance of reflective knowledge. Suppose I am questioning whether a is A, and that I am conscious of this question or intuitively affirm it. Now we may universalise this individual question to any extent—we may abstract all the categories that belong to it—but we shall never find that one of them is an act of intuitively judging. A question, however generally we consider it, as long as it

remains itself, never becomes a judgment, nor can we abstract from a transcendent act, while it remains itself, an intuitive act. The universal character of a judgment which makes it a judgment can never be predicated of a question. Thus we have proved that the act of being conscious cannot be identified with any general quality in its object. Is it then any relation of its object ;—is it a unity of the manifold of this sort ? Such unity or identity is based on, and relates the qualities which are identical. We have seen that these qualities are not the act of being conscious, but the supposition is that it may be the relation of identity between them. Now the subject is often taken to be the source of this and other relations but, I think, never itself a relation. The supposition is ridiculous. To suppose that a relation judges is like supposing that a taste sounds, or that a smell is coloured. But as some things seem ridiculous merely because they are new, let us try to find, as in former cases, some contradiction resulting from the supposition. I am conscious of *a* and *b* ; and we will suppose of a relation of identity between *a* and *b*. This relation is my act of being conscious. In being conscious of this relation, I am only conscious of my act of being conscious over again. But as such self-knowledge is very different from a knowledge of identity, and consciousness of identity is not self-consciousness, our assumption must be considered to be refuted.

What is true of this relation will be found to be true of all others : and the act of being conscious is neither any quality, nor any relation abstracted from its object. And, as it is no one of its individual objects nor the whole manifold of such objects (§ 12,13), we may regard this as proved, that the act of being conscious is distinct and underived from its object, however closely united to it. And the character of the act is such whether it is yours or mine, so long as you mean by the phrase what I do, or so long as there occurs in your mind an act of this character.

§ 15. *The act of being conscious is the subject exercising one of its functions.* This is the conclusion to which we are now committed. Looking in consciousness, we found that the manifold of objects presented there are neither individually, collectively, nor abstractedly the act which is concerned about them. We express the distinct and unique nature of the act by saying, that it is the subject itself in one of its modes and states of acting. For the subject is the ' I ' ; but what we have been considering is not the ' I ' or subject in its highest abstraction, or in its complete character, but the subject as conscious—the ' I am conscious '. And our experi-

ments have proved—that the subject persists in spite of the attempt to do away with its subjective character ;—persists at least as an act of being conscious, however the case may be with its other so called acts, and whether they can, or cannot be resolved into some modification of the object.

We have then returned to the view which at first we were disposed to reject, but the grounds which led us to suppose it false are mistaken. Because the subject, as act of being conscious, seemed abstract, universal, persistent, and changeless, we thought that the view of it as a distinct reality was a fiction of metaphysicians who, as is the way with them, had hypostasised an abstraction. But the act of being conscious is only an " abstract universal " when we abstract it from its manifold and concrete objects, and—on the supposition that the subject has other acts—from the other acts to which it is united. It is only persistent and changeless, so far as we abstract from the fact that it is exercised now upon one set of objects, now upon another, or so far as we regard the manner of its continuance—how in ceasing to condition one object it comes as continuously to condition another. This unity of the act and its object we call consciousness which is no mere act, but always an act of being conscious of an object. And two ways of conceiving consciousness alternate in our minds according as one side or the other of its unity is prominent. Sometimes we conceive of it as an act conferring an intensive reality upon its object ; sometimes as a little world in itself—a microcosm, Then it is the wonderful panorama of objects that pass through it, that it holds for a time, which we are thinking about. But distinct from this panorama, though in unity with it, and sustaining it, as, we suppose, the Universal Mind sustains the universe, there is always this simple ultimate act of being conscious, so little and obscure that we can scarce detect it, so important that without it the whole panorama would fall to pieces.

§ 16. *Summary of the argument.* I have sought to show that Consciousness, when we abstract it from the other acts combined with it, is nothing less than a judgment ; and that it is a unique judgment. Further, that in its uniqueness as an act of judging it is simple or uncompounded and unanalysable. But I have not intended to imply that Consciousness as a whole is simple. For Consciousness is a union of act and object. As an act it is simple ; as a union of act and object it is complex. The whole is a judgment—an act of judging united to its object, and whose object is altogether contained in the whole. This judgment,

besides its object, contains also the difference between its act and its object. Here is shown its contrast with the Transcendent Judgment. The Transcendent Judgment is not a *union* of act and object. It neither contains its object, nor the difference between its act and its object. It merely judges-its-object (see MIND No. 59, "The Antinomy of Thought"). But there is a fundamental unity between these widely contrasted judgments. Each is a judgment—an act concerned about an object different from its act; and, as an act, each is a simple reality. Thus Judgment, universally as an act, is such a simple reality. Lastly, I think I have proved that this mysterious something—the Subject—cannot be resolved into any association of presentations, nor into any one of them, nor be derived by abstraction from them, so far at least as the act of being conscious is concerned, which is a genuine function of the subject.

§ 17. *The act of being conscious, an element in a whole.* I will add in conclusion a few remarks upon the nature of the concrete judgment of which this act is an element. When we analyse any such judgment we recognise that, on the one hand, there is something presented, and, on the other, an act which transcends presentation. But there is a third constituent not apparent at first—an act which is concerned about the presentation. Each of these two acts, regarded abstractedly and apart from the concrete judgment in which they are united, is itself an act of judging, and nothing less or simpler. Thus an ordinary concrete judgment is not a union of ideas and presentations, not like reality a union of singular and universal, but is a union of an immanent and transcendent judgment. A presentation is not a judgment; a universal is not a judgment; the union of both is not a judgment. A presentation is an object of an immanent judgment; a universal—if it means a unity of the manifold—is an object of a transcendent judgment, since the manifold is not completely presented. As there is an act which judges presentations, so there is an act which judges universals and all objects not presented. The concrete judgment combines both acts, and contains also the object of one of them. Thus analysis reveals three ultimate constituents at least of the concrete judgment of which two are elements and no further analysable—(1) An intuitive act which conditions the presentation and maintenance of the reality its object; (2) The object or objects presented; (3) A transcendent act which judges-an-object without presenting or affecting it in any way.

IV.—ARNOLD GEULINCX AND HIS WORKS.

By Professor J. P. N. Land.

[Under title of "Arnold Geulincx u. die Gesammtausgabe seiner Werke," this article (cp. MIND No. 61, p. 160) originally appeared in the *Archiv f. Gesch. d. Philosophie*, iv. 1. The rendering here given (with consent of all the interested parties) will not only make Geulincx, for the first time, really known to English readers, but may also, it is hoped, help to secure an ampler recognition for Prof. Land's labours in preparing the forthcoming collective edition of the philosopher's works. Vol. i. will appear at midsummer, to be followed by ii. and iii. at intervals of a year.—EDITOR.]

SINCE Brucker's time the name of Arnold Geulincx has been well known to every student of philosophy in connexion with the doctrine of Occasionalism. The Flemish thinker was prevented by the unfavourable circumstances of his time and by his early death from gaining his rightful place among the *coryphaei* of modern philosophy; still, his importance has now become more and more recognised, at least in Germany. Within the last years, many monographs have appeared dealing with various points of his doctrine, and with his relations to Descartes, Spinoza and Leibniz. His writings, meanwhile, have long been so rare that hardly anyone can have seen them all together, and, till a short time ago, no more was known of the circumstances of his life than was contained in the meagre notice of Paquot (1768). The *Biographie Nationale* of the Royal Belgian Academy [1] merely added to this some erroneous fancies. Now, however, by the diligence of Victor Vander Haeghen and Abbé G. Monchamp, we are much better instructed as to the first three quarters of his history. The former of these writers has also definitively settled nearly everything that concerns the bibliography of his author.[2] Something remained to be discovered as to Geulincx' last years, during which he taught at Leyden and wrote his systematic works. This I have myself extracted from the archives of our town and

[1] T. vii., col. 691-3, Art. by Reusens.

[2] Vander Haeghen, *Geulincx; Etude sur sa Vie, sa Philosophie et ses Ouvrages*, Gand, 1886. [See MIND xiii. 298.] M. Vander Haeghen is the worthy son of a bibliographic expert

Monchamp, *Histoire du Cartésianisme en Belgique*, Bruxelles et Saint Trond, 1886.

university. I now feel pretty confident that any further information we may obtain will be owing to some lucky chance. After a fourteen years' search, I have, moreover, succeeded in getting together the complete material for a collected edition of Geulincx' writings. The printing of them will begin in the autumn of this year (1890), with the help of what remains of the Spinoza-fund. I am, accordingly, in a position to lay before the reader the following account, first of the man himself, and then of the forthcoming publication of his writings.

Geulincx (the *eu* is pronounced as *oe*) was baptised in Antwerp on the 31st of January, 1624 (not 1625). He was the eldest son of the town's messenger of Brussels. His parents were fairly well-to-do burgher people. Of their four younger children we know the names and the dates of baptism; also that one son learned painting under the renowned Jordaens, and died in his thirtieth year, leaving a widow. Arnold, as may be conjectured, studied his *trivium* with the Augustine friars, who, next to the Jesuits, possessed most Latin schools in the Southern Netherlands. He went to the University of Louvain in 1640 or 1641, and was received into the 'Lily' *Paedagogium*. In the four *Paedagogia*, at that time, nine months were first spent on logic, then eight on physics and metaphysics—all according to Aristotle. The last quarter of the philosophical course of two years was devoted to repetition. Ethics was taken on Sundays and holidays. All through, the students had to take part in disputations. The arrangement of the course of instruction, as we see, was the traditional Peripatetic one. The practice, especially in the matter of theses, was much freer than one would have thought likely; seeing that the country, both ecclesiastically and politically, held so fast to the old order. Even here, influences from the humanism and scientific movement of the time could not be prevented from forcing their way among the scholastic traditions. Of course, the necessary respect for form had to be observed; but, under this condition, occasions were continually presenting themselves for the introduction of novelties. Acquaintance with Stoicism and Epicureanism was obtained through the philologists, Justus Lipsius and Erycius Puteanus. Mathematicians and students of medicine could least of all withhold their interest from the newer positive discoveries. Under these and other such influences there had appeared, before 1638, the *Augustinus* of the theologian Jansenius, a Dutchman; and, although his publisher, Libertus Fromondus,

took side with the antagonists of Cartesianism, that book, expressing as it did a widespread conviction, showed how deep the opposition to Aristotle and Scholasticism had long since gone. In later years, the learned adherents of Jansenius and of Descartes were mostly the same men ; and we have every reason to suppose that Geulincx' occupation with that Augustinian theology prepared the way for his going over in his mature years to the reformed confession. For the development of his views, it is of special importance to note that one of his teachers in philosophy, Gulielmus Philippi, was a zealous Cartesian ; declaring himself such, by his writings, as late as 1661-4, in a way that drew down the final condemnation of the new doctrine from the University. Gerard van Gutschoven, Philippi's colleague in the medical faculty, was even a personal friend of the French master, and no less frankly attached to his philosophy.

Geulincx took the degree of Licentiate in Arts with great distinction in 1643 (ten years later he calls himself Doctor of Philosophy). He next studied theology for a time, and gained the like degree of Licentiate (on account of his age not before 1649). As a profession, however, at least at first, he chose the department of philosophical instruction. In 1646 he obtained a place in his *Paedagogium*. As one of the two *Professores secundarii* he had to give readings in the afternoon, especially upon a part of the *Organon*, with the books *De Coelo* and *De Generatione et Corruptione*, the *Meteorologica*, the *Sphaera* of Joh. de Sacrobosco, and Arithmetic ; also to preside at disputations. He was soon highly esteemed as an intelligent and ready lecturer ; and in December 1652, when he had just been promoted to the grade of *primarius*, he was entrusted with the treatment of the so-called *Quaestiones quodlibeticae*. These were no longer in his time a dialectical tourney among several *magistri*, but discussions by a single *magister* on questions of general interest. The themes, as it appears, were proposed to the disputant a short time beforehand ; and he had to develop with intelligence and in agreeable form the reasons for and against. On this occasion it was asked, among other things, whether those who are busied with the sciences ought preferably to occupy themselves with the older or with the newer writers ; whether riches, or the poverty usual in his state, is most profitable to a scholar ; whether women should be admitted to philosophical discourses ; whether it becomes well-behaved youths always to dress in the fashion ; whether it is advisable to set good liquor before friends who come to pay you a visit ; and gener-

ally every sort of question that could serve for the instruction or entertainment of an academical society. The intention evidently was to provide for a festive assembly of teachers and scholars a few hours of intellectual amusement. Geulincx had a faculty of ornate and witty expression suitable to the occasion; but he had also very much at heart which he was desirous to commend, at least by hints, to the serious consideration of his hearers. In an allegorical introductory address, he opened a criminal session, in the name of supreme reason, upon the corrupters of science, who take the likeness for the thing, who do not hesitate to represent the world as ordered in the way we should like, or who presume to set up axioms, rules and whole systems according to their own good pleasure. Instead of their brain-cobwebs, an improved logic, with geometry and empirical science, ought to be studied; and then the attempt might be made at scientific explanation of what is given. Also in the little discourses on the questions proposed for dispute, there is many a stroke disclosing Geulincx' own thought upon far weightier matters and his low estimate of official science. The whole series, which occupied several sittings, must have been listened to both by friends and opponents with the closest attention. It was forthwith printed at Antwerp, with the author's coat of arms, bearing the device *serio et candide*, on the title page. It also stirred up the conservative party in the University to active measures. Within a few days after the academic ceremony, the professor of medicine, Plempius (of Amsterdam), dispatched a circular letter to his colleagues soliciting a declaration against Cartesianism. Such a declaration he in fact received only from four theologians and one jurist. He had it printed in the appendix to the third edition of his *Fundamenta Medicinae* (1654); and with that he had to content himself. The letter does not mention Geulincx and his discourses; nor is the tone of the six opinions marked by any special animosity. Against the new philosophy are alleged, first, various theological and pedagogical scruples. Then the attack is directed in particular upon its repetition of long outworn thoughts of Democritus and Epicurus; its unjustified paradoxes; its recurrence to God as the cause when at a loss for any other. Behind this enumeration of grievances, the chief motive of the protest lay unexpressed. If philosophical reform was allowed to break in, the consequences, it was felt, were beyond all certain reckoning. Stability of school, church and social order were threatened. It was natural that good subjects and Catholics should be anxious; and their anxiety

formed a resisting power which, now that Geulincx had publicly challenged it with such freedom of heart, constantly worked against him in secret. In no long time, it was destined to bring him down. Meanwhile, he was Dean of the Faculty of Arts[1] from March to September, 1654, and therefore still had the majority in that Faculty on his side. As one of the two *primarii* in the *Paedagogium* he had to deliver lectures in the morning-hours on the *Isagoge* of Porphyry, the *Categories* and the *Analytics*, the *Physics*, with the books *On the Soul* and the *Metaphysics* of Aristotle. Even his opponents did not at all points swear in the name of this master; and he would not fail to interpose critical remarks of his own. So late as September, 1657, he was examiner along with four others for the degree of Licentiate in Arts. He was even designated for a canonry of the cathedral of Aix, but was not allowed to take possession of it; ostensibly because he did not succeed in proving the legitimacy of his parents' birth. The reason may have been that the earlier church-registers of Antwerp were incomplete—which, after all the troubles in the Netherlands, would have been nothing extraordinary. Such a circumstance would be seized upon in influential quarters as a pretext for taking care that at least no ecclesiastical office fell to the dreaded innovator. Having kept him out of the canonry, his enemies were soon after to succeed, unexpectedly, in putting an end to his position at the University, and also to his residence in Louvain.

What really enabled them to strike the decisive blow in legal form is not stated in the official record. An earlier conjecture, in a first essay of mine on the fortunes of Geulincx,[2] has been in part overthrown by a later discovery. With our present knowledge, it is now possible to put together the following circumstances. At the end of the year, 1658, in which he was deprived of his office, Geulincx married, in Leyden, a relation of his mother. His parents had come to Louvain to reside with their son in 1649, and the Susanna Strickers who afterwards became his wife may have come thither, from Weert near Antwerp, either on a visit or to help his mother, Mary Strickers, or after her death in order to act as housekeeper. In any case, her cousin had fallen in love with her. Before making her

[1] Among the five Deans of the University he is mentioned in the last place. The higher Faculties were those of Theology, of Canon and Civil Law as separate departments, and of Medicine.

[2] Dealt with by Dr. Spruyt in *Archiv f. Gesch. d. Phil.*, iii., 503.

his wife, he would have to seek permission to retain his office in the University. Since he had been proposed for election as canon of the cathedral, he must have received minor orders—which, as is known, do not bind to celibacy. His teacher Philippi, who was Canon of Bruges, had been in similar case. On his marriage in 1630, Philippi had been empowered by the Council of Brabant (the highest court of justice in the country) to retain his professorship of philosophy at Louvain, though such permission was to be confined to him. Still, Geulincx may have thought that, as there was no insuperable canonical hindrance to his marriage, and as an exception from the rule had been allowed in favour of his elder colleague, he might himself expect the like treatment. But this was in the eyes of the academical conservatives a very great scandal. Their following had certainly been growing stronger within the last years; and they were able to convince the majority of the members of Faculties that it was high time to put a stop to the overweening doings of the young neologist. The legal question, however, still remained open, and what its settlement would be was doubtful; the strength of the reforming party also could not prudently be underestimated. Accordingly the surest way was, after the manner of clerical tradition, to settle the affair in secret as quickly as possible, and, without alleging motives, to put the friends of the accused at once face to face with the accomplished fact. Geulincx lodged a protest with the Council of Brabant, and obtained an injunction allowing him to retain his office provisionally. He may nevertheless have soon perceived that convictions such as his could not permanently be maintained in the academical circle of Louvain. Accordingly, while it was still spring, he betook himself to Leyden. He had little or no pecuniary means. Paquot will have it that his property was distrained by creditors. By none of his opponents is any dishonourable conduct laid to his charge.

The national University of Holland had always owed a considerable part of its fame to emigrants from the south. Scholars of any reputation who could not accommodate themselves to the Catholic government were readily received, and, if they joined the Reformed Church established in Holland, were given official posts as teachers. As to this, the decision rested with the Curatorium—a body which commonly consisted of four distinguished men representing the sovereign Provincial States, of the Burgomaster of the town, and of a secretary. It was thus a thoroughly political body. The

interests it had at heart were freedom of instruction and the prosperity of the University—but, no less, external peace among the parties in course of formation and the education of citizens qualified to be of service to State and Church. The religious passions of the multitude and the pretensions of the Church-courts—the so-called class-assemblies of preachers in each district—had at the same time to be constantly regarded. At present the aristocrats of the towns sat at the helm under the guidance of De Witt. Themselves not disinclined to freer views, they had yet, with the best intentions, to avoid giving room for violent changes. If they had completely disregarded the ecclesiastically-minded, they would have endangered both their own position and the preservation of the existing state of things, which, on the whole, gave satisfaction. They might easily provoke that new rising of the Orange party, allied with the clericals, which threatened them in those days. The adherents of the then existing order included Spinoza, who championed its principles in his political and theologico-political tractates, and was in friendly relations with the leading statesmen, so far as was permitted to a burgher and an excommunicated Jew. This, indeed, belongs to a somewhat later time; but from 1654 to 1672 things remained generally the same. From these circumstances the relations between Geulincx and the University at which he now presented himself become explicable. In the highest places of the State there was no disinclination to moderate Cartesians. These were indeed natural allies of the ruling political order. The rulers, however, were not sufficiently firm in their seats to venture openly to recognise Cartesians as such. Senators who, from scientific interest, would willingly have done all that was in their power, could only take the risk upon themselves with the necessary precautions. Now that the new doctrine had for years been a constant apple of contention among the students, the supreme government itself had in 1656, after many unsuccessful attempts at settlement, very strictly forbidden all mixture of theological and philosophical matters; but without wishing to interfere with the freedom of philosophising. It was expressly ordered that teachers should keep within the limits of the received mode of instruction. The books of Descartes were excluded. According to the intention of that ordinance there remained open to those of another way of thinking only the press and opposition at disputations—under the condition that they expressed themselves temperately. In truth, to the learned whose intellectual needs were fully satisfied, by the ecclesiastical doctrine,

by natural science or by philology, the new philosophy in the main appeared nothing but a troublesome intruder. Scholasticism tempered by humanism was, they thought, sufficient for the preliminary mental discipline of unripe youth. To what purpose, instead of keeping them to solid and profitable professional studies, let them involve themselves in the endless doubts and controversies of contemporary thinkers? And this at the expense of that harmony and settled conviction without which a successful activity in the service of the civil and ecclesiastical order was not to be expected? After all, the independent pretensions of philosophy had only been allowable in pre-Christian antiquity. For us, the most important questions had been settled once for all by the Gospel. At least in the universities then, let the traditionally guaranteed material for the formal strengthening of the judgment be still retained. If to one or another the philosophical impulse allowed no rest, let him wait till the age of manhood; there would be no objection then to his making what attempt he could to speculate for himself. How long the nature of things would endure such an artificial seclusion of the school from life, these cautious people did not care. The 'Philosophical Faculty,' as it was pleased to call itself, was almost depressed to the level of a higher boys' school; but, in compensation, it got rid of a heavy responsibility. We must not blame this too much. The growing philosophy was as yet too little developed to admit of its ends, its means and its dangers being so well surveyed as those old ones that had lived their life. A case in some respects parallel is the rivalry between classics and modern literature at the present day. The instruction into which it was proposed to introduce the Cartesian philosophy was, after all, principally propædeutic; and the pedagogues of the time might well regard it very much as those of to-day regard the substitution of some literature that is now in process of development for classical culture. Thus it came about that even the three representatives of the philosophical branches in the Leyden faculty thought as Cartesians without being willing to teach in the same spirit. The moralist, Bornius, an adroit man of the world, whom Heydanus calls a Cartesian in disguise, came forward in his opening address of 1653 in the character of an eclectic, but recommended for beginners the tried conductor, Aristotle. De Raei, lecturing on physics, where it was already the accepted procedure to keep facts and explanations apart, could better afford to present modern theories as the more probable. The third philosophical representative of the faculty,

Adriaan Heereboord, declared himself, in physics, on the side of the moderns. He was, however, a strict adherent of the Reformed Church, for whom philosophy was subordinated, as Hagar, to the theological Sarah; and, in his logic, he kept to the official leading-strings of Burgersdyck. To this man especially, Geulincx and his endeavours after philosophical reform must have been an annoyance; the more, if he already knew that Geulincx had a way of opposing his own philosophy as Christian to the heathen Peripatetic philosophy. Not until after Heereboord's death was the Southerner to succeed in conquering a post at the University.

It is remarkable that the true head of the party of progress was a theologian—the wealthy preacher and professor, Abraham Heydanus. The influence of this humane and cultivated churchman with the Curatorium and the government had already effected the nomination of his well-known colleague Coccejus, and had brought about many a softening of the decrees carried through by the conservatives. From the beginning to the end of our thinker's activity at Leyden, Heydanus was his protector and benefactor. Through him it, no doubt, was that Geulincx immediately went over to Protestantism. (The original attestation has been lost with the church-registers of the time.) On the 7th of May, 1658, he was matriculated by the Rector; it is noted that he had a household of his own. At the little open spot mentioned (Garenmarkt), and, as may be conjectured, in the same house, his bride Susanna Strickers was living with her mother when, towards the end of November, he had his name inscribed with hers in the register of mixed marriages. On the 8th of December she became his wife. The witnesses named are her mother and Geulincx' brother-in-law to be, Sebastiaan van den Bosch. The family therefore was not opposed to the union, and probably had only gone with Geulincx to Holland on account of this, without joining him in his change of religion. The two members of the family who were present may have returned home at once. Perhaps that is the reason why no further trace of it is found. If, as may have been the case, the deceased father of the bride was the Arnoldus Strix or Strickers who had stood godfather at Geulincx' baptism, that would have been an additional ground of scandal for the opponents of the marriage when it was first planned at Louvain.

To commend himself in his new surroundings as a man of learning, Geulincx had taken the degree of Doctor of Medicine on the 16th of September. That he intended to

practise as a physician is at least doubtful; on the other hand a *Medicina contracta* is found among the transcribed volumes of lectures of which we shall have to speak later. From having been shortly before a celebrated faculty professor, Geulincx now, at first, found himself forced to depend on the proceeds of private lessons in subjects that were little in demand, and on the bounty of his patron Heydanus. An obstacle to his making way as a teacher was his Latin, formerly much admired. On the models furnished by Louvain, he had acquired a florid and somewhat mannered style, disdained in Leyden as unclassical. A native of Brabant and a man of sanguine temperament, his address had a certain exaggeration unpleasing to the simpler and sedater Dutch. Besides, he had been dismissed from his office on grounds that were not correctly known, and had come thither as a resourceless fugitive. To proceed at once to set up a household under such circumstances might seem to many a proof of unpardonable lightness of mind. Was it certain that such a man's change of religion had been seriously considered? Had not the good pastor been deceived? So many foreign fugitives had met with a reception better than their deserts in the hospitable republic; and this had in no long time become manifest. Geulincx was accordingly almost everywhere received with reserve. This reserve and the ill-will and the calumnies of certain people, he was less likely than others to escape. In spite of all, there was discernible in the man a not insignificant force of mind, that might make of him a dangerous rival. Without good counsel and patience, he could not hope to reach his aim.

In the spring of 1659, and not till then, the academical Senate imparted to him the right to hold *collegia*, or private lectures before more than one hearer. This was, no doubt, in recognition of his degree of Doctor of Philosophy. The presidency at public disputations within the university-building was granted by the Curators upon approbation of the Faculty; but not until late in the autumn. (Heereboord was not there, being at the time under ecclesiastical censure for having been found drunk in the public street.) The proviso was made that he should keep strictly within Peripatetic limits, and that the consent should always be revocable. He was also expressly refused all claim to further concessions. When in the following year he nevertheless made bold to apply anew for permission to deliver unpaid public lectures, Heereboord was again at his post, and he got for answer a refusal, together with a withdrawal of the permission previously granted. The decision, however, was

not officially communicated till four months afterwards. For the rest, it was the habit of the Dutch regents to comply with public opinion or with the stronger party by severe decrees, and then, by carrying them out as mildly as possible, to shelter those who were aimed at. In June, 1661, the right of public instruction without title or payment was granted to yet another Peripatetic, of the ordinary stamp, David Stuart. Eight days after, Geulincx' worst antagonist, Heereboord, died, and he could again try to get a hearing from the Curators.

This time he began by writing his *Logica fundamentis suis, a quibus hactenus collapsa fuerat, restituta.* For the dedication, the Supreme Council rewarded him, in August, 1662, with seventy gulden and a poorly paid Readership. The intention of the Council was doubtless to open a back-door for that new philosophy which, in presence of the dominant prejudices and the existing regulations, they dared not bring into the foreground. By this means they hoped to content many students and their advocates, and to prevent the University from falling behind the times. Whoever was offended had at any rate the consolation that David Stuart was raised to the rank of *Professor extraordinarius.* The received logic thereby kept its precedence, and was not to lose it in case of further promotions. Yet Geulincx' appointment was, after all earlier measures, a considerable event. For the first time, a philosophical chair in the University was assigned to an independent thinker; and it was granted at the very moment when he had shown that the Peripatetic clause in his installation could be to him nothing but a dead letter. This was attested anew by his inaugural address of the 14th October, *De removendis parergis et nitore conciliando disciplinis.* Without mentioning the scouted name of Descartes, he delivered strokes pointed with wit against the chief faults of the old method—the widely expatiating introductions, the premature discussions upon deeper questions, all the historical and rhetorical rubbish with which the simplest things were heaped over and obscured. Through such evil circumstances, logic had fallen into contempt with many. Others held that innate thinking powers enabled them pretty well to dispense with it. And yet logic was nothing less than the science of the intellect, and, as such, of far more moment than even mathematical and physical inquiries. "Sed generosae mentes," ran the conclusion of the address, "exsolvunt se istis praejudiciis; malunt secum quam cum corpore versari. Et hisce logicam placere necessum est; sed genui-

nam logicam, nam in spuriam illam merito debacchantur; illa mihi juxta ac illis invisa semper erit." With such an outspoken declaration did the new prælector stand forth against the old School—still excessively powerful. And in that place, as Geulincx knew, he had nothing to expect, in face of its enmity and the indifference of most of those who despised it, but permanent poverty and neglect. Yet, if, like the *Professores ordinarii*, he had chosen to make a few dexterous concessions, he possessed talent enough to secure for himself a more brilliant lot, as they had so excellently succeeded in doing. Unlike them, however, he was a man of character, and awaited his victory from truth and supreme reason. For the moment he did not seem to have miscalculated. After a few months he could, without hindrance, open disputations upon physical and ethical subjects. In the summer of 1663 the dedication of the *Methodus inveniendi argumenta* was rewarded by the Curators with sixty gulden. This was followed by an increase of stipend in the autumn of 1664. In the succeeding year there was a new edition of the Louvain *Quaestiones quodlibeticae* under the more classical title of *Saturnalia*. Geulincx' Latin was now choicer than it had been at Louvain; the contents of the book were adapted to the ways of thought of republican and protestant readers; elucidations were also added to a part of the introduction. The book was dedicated to a nobleman of Zealand; and from the dedication we learn that this nobleman's nephew had lived in Geulincx' house as a pupil since his appointment three years before.

The first tractate on Ethics appeared at the same time. This brought Geulincx an honorarium of thirty gulden. It was also the cause of his being raised to the rank of *Professor extraordinarius*. He did not, with the step in academical precedence, gain an increase of stipend; but instead of this he was granted free residence in the States-College or national boarding-house for theologians. The post of Sub-regent of that establishment was then vacant, and the number of *alumni* so small that there was no haste in filling it up. To hand it over entirely to an enlightened innovator was more than could be ventured on in face of the clericals; especially as the College had acquired a dubious reputation in the Remonstrant quarrels of half-a-century before, even falling under the suspicion of being a hot-bed of Catholicism. Geulincx, therefore, had to be satisfied with the family-residence that stood empty. In return for it he may have given some services as *Repetent*. Many members of the foundation would have occasion to take part in disputations under him.

For the third time he had to deliver an academical address. This time he chose for a theme the contempt into which even the most precious things fall among men when they think them too well known. Especially is this true, as he proceeded to set forth, of our own reason, whose utterances are far less regarded than the shows of sense and fantasy; although these have their source in the bodily life, radically foreign to the soul, and can only darken the knowledge of our self and of its true interests. Here is the key to Geulincx' whole view of philosophy. The dualism of mind and body is for him a determined fact. What he proposed was to develop the mental life from its own principles, independently of all that may be outside, and to bring it into settled order. Hence he conceives of physics as a merely hypothetical explanation of what is given in perception. Logic and metaphysics, on the other hand, have to lay their foundations in indubitable facts, and thereby to prepare for an apodictically certain ethics. Natural science he claims to have treated as rationally as possible, in attachment to experimental research; but he devotes himself by preference to the sciences of mind. In these there is no need to wait for isolated indications from the external world, but ever-present reason gives the securest direction for the guidance of life conformably to its demands. And ethical science was not for Geulincx merely the business of the learned classes. Besides continuing his ethical and physical disputations, and immediately opening others upon the foundations of metaphysics, he translated his first ethical tractate into the language of the country. The translation is a model of Flemish style; already to be remarked in the charming preface with which he seizes the occasion for commending this work also to the Curators.[1]

[1] The little book is extremely rare, and has escaped the notice of M. Vander Haeghen, who only knows the citations from it in Bontekoe's first edition of the complete Latin *Ethica*. This is why he says (p. 211): "Les notes flamandes de Geulincx sont pleines de mots français, conformément à l'usage de son temps (Voir, p. ex., *Eth.* tr. i., sect. 2, § 11, n. 2)." The passage he has hit upon is one that Geulincx himself introduces as follows:—"I will here alter the languages a little, in case anyone should be more accustomed to the courtly or school-speech (as they call it), and should apprehend this better; for it is necessary that every one should rightly understand what is said. To use that speech properly, I must stick together bits of different languages: that is the fashion. Having got through with this, I will again, as becomes a good fellow-countryman, proceed plainly, and without circumlocution." Then follows the parody of that ornate mode of speech full of foreign words. It is even printed differently from the rest of the text. Bontekoe, who did not understand the sarcasm, transcribed the passage as simply a supple-

They had already given him permission to deliver ethical lectures (Feb., 1667), and had raised his stipend to 700 gulden. Whether, in exchange, he had to give up his residence in the College is uncertain. It was not until the late autumn of 1668 that the Peripatetic Spinaeus was installed as Sub-regent. No compensation was then assigned to the temporary resident. Nor was Geulincx invited to a University-feast in honour of Spinaeus and others who had been newly nominated. His well-wishers did not feel entitled to attempt anything which, to no purpose, would have called forth lively opposition. Yet they put in his way what they could. For example, the President of the *Collegium Oratorium*, George Hornius, having long been absent on account of a mental malady, Geulincx received the charge of conducting the exercises. The definite appointment was made as late as the 1st of June, 1669 ; but possibly Geulincx had already begun with the exercises in private. We have still, at least, the notes of his lectures under the above title (*Collegium Oratorium*). They were even published towards the end of the century at Amsterdam.

Geulincx was yet only forty-five years old ; but now the remaining days of his life were numbered. He was not, like Spinoza—who, born nearly nine years after him, reached about the same age—snatched away by an insidious disease. Quite unexpectedly he was to fall a victim, along with many of his colleagues—among them Coccejus—to one of those plagues by which the town, as late as the seventeenth century, was often desolated. The descriptions of the medical eye-witnesses are unintelligible to the physicians of to-day, and the nature of the disease cannot be determined with certainty. Some think it was typhus ; others that it was a particularly bad kind of malaria. Melancholy experience keeps us still familiar with both diseases at the present day, though within a smaller circuit. From July to November, 1669 there died, among others, the chief magistrate of the town, four ruling burgomasters, more than half the council, and, in sum, two or three hundred persons every week, mostly of the better-to-do classes. The academical lectures could not recommence till the 21st of November—instead of immediately after the dog-days. The day before they began, the venerable Heydanus delivered in the theological audit-

ment to the text, without the introduction belonging to it. The translator of 1691, De Reus, whose language M. Vander Haeghen extols as much purer, rather gives the impression of a stiff and timid purist. For his inaccurate rendering he deserves the blame with which the Belgian scholar visits him at p. 167.

orium an introductory discourse in which he mentioned for honourable remembrance his own wife and many a friend and official colleague. The University had lost, among others, two philosophers. One was David Stuart, who had just repaired to Paris and was about to be operated upon by a Parisian expert for the stone. With him perished "copiosa illa logicae artis supellex, et distinctionum innumerabilium apparatus, et eclecticae philosophiae quam promittebat, spes omnis quam ostentabat". So that even the erudition-crammed representative of the official logic had not remained quite untouched by the movement of the time. The other death was that of our Geulincx—"ille quidem ingenio felix et eloquio disertus, ut nisi paupertas (illa quidem bonae mentis mater, sed magnum, ne emergant qui cum illa conflictantur, impedimentum) obstitisset, inter excellentes hujus seculi philosophos et oratores nomen et decus tueri potuerit".

I have not been able to discover either the date and place of his death or where he is buried. On the 8th of November he was still among the living; his last quarter's stipend having been paid only twelve days before that obituary record was dedicated to him. On the 27th, the Curators decided, at the petition of his widow, to allot to her, "for the support of her family, on the ground of compassion," a pension of a hundred gulden a year for two years, not to be increased. The accounts, which have been well preserved, show that the money was never received. Already at the beginning of January the poor woman had to be carried to the grave at the expense of the Senate; and there is no further mention of the family, whose very existence is only known of from the decision as to the pension. Perhaps the children also had in the meantime succumbed to the still-prevailing disease.

No letters or other papers have been preserved; and this is easily explicable if, as may be conjectured from all indications, the household had been extinguished in a few weeks. Indifferent under-officials, to whom the care fell of the little that had been left, would destroy everything combustible as dangerous to health. Of a portrait, in Geulincx' circumstances, there could scarcely have been question. His handwriting we possess only in the official records of the Senate, in which he had three times to subscribe the form of a receipt for disputation-dues to the amount of a few gulden. The editors of his lecture-volumes between 1675 and 1696 had already to content themselves with copies made by pupils. One of these pupils was Bontekoe, who

would certainly have spared no pains to get possession of the originals.

Such an end in the prime of life we at first lament as untimely. The best that the thinker had to give had never yet seemed to him fit to go beyond the narrow bounds of the lecture-room into the great world. We should have liked to see the indefatigable teacher attain the highest academical rank, become a famous speaker and writer, and take part in the progress of his science amid universal recognition. But, on closer consideration, it becomes plain that, so far as Geulincx might have promised himself any important external result of his struggle with fortune, he was spared many a bitter disenchantment. No more than four years after his decease, the Cartesian movement, which we have seen arduously maintaining itself at the University, was forcibly suppressed by the victorious Orange party and the strict clericals joined with it. Theodore Kranen, the last representative of Cartesianism in logic and metaphysics, was transferred to the medical Faculty. All chairs, as they became vacant, were filled up with adherents of the Peripatetic tradition; and so, in the end, this alone could make itself heard within the University. The younger men, indeed, zealous disciples of our Geulincx, still bestirred themselves continually in disputations, and on every opportunity gave tokens of their disapproval to clerical opponents like Spanheim. One disciple, Johannes Swartenhengst, who had defended a treatise of the master on the 3rd July, 1666, tried to continue his teaching. At the beginning of 1672 he was even permitted to hold the presidency at philosophical disputations. The talent of these young men, however, was not equal to their zeal, and they had no power to stem the current of reaction. In 1675 the rising heretic was expelled from the University; and in the following year the almost octogenarian Heydanus had to pay the penalty for his publicly expressed blame of the latest regulations of the Curatorium by the loss of his office. He died on the 15th of October, 1678, as a highly honoured preacher. We have now for a year possessed a detailed monograph upon him by Dr. J. A. Cramer, with all particulars drawn from the official records. Where the expelled Swartenhengst found a resting-place I do not know. Bontekoe, who was expelled along with him, ended his life, ten years after, at Frankfort-on-the-Oder, as body-physician to the Elector of Brandenburg. There was one subject, however, in which Aristotelianism had plainly become impossible. In physics, experiment and calculation had got the upper hand, and

would be exorcised by no decrees. Here, accordingly, the circumspect Cartesian De Volder retained his post beside the Peripatetically-minded Wolferd Senguerd. The teaching of these two, with its preponderant emphasis on facts, excited no disturbances. Rather, it brought the old theoretical antagonisms into oblivion. On the other hand mental science of the kind that Geulincx had projected was turned out of the University along with his pupils (who indeed would hardly have advanced it much). The objective side of the Cartesian philosophy lost itself in empirical science, the cultivators of which have since then been regarded in Holland as pre-eminently "philosophers".

Outside the University there were still some, both learned and unlearned, whom the spiritual nutriment supplied by the churches and public schools did not wholly satisfy. Many of these endeavoured in quiet to form convictions of their own in accordance with the new knowledge of the times. Not a few found refreshment in the writings of Spinoza—Latin or translated. Others would rather find comfort in the apparently less radical Geulincx. To their desires we, no doubt, owe the publication of almost the whole of the deceased thinker's lectures, which, before publication, would get known by travelling from hand to hand. First, Bontekoe, under the name of Philaretus, carried through the printing of the complete *Ethica*, and brought out a new edition of the *Methodus*, to which were added the author's answers to some objections made against the former work. It was in the year of these editions, 1675, that Bontekoe had to leave the town; and he found no opportunity of continuing the undertaking. The *Ethica* appeared in 1683 for the second time; the publishers now being a different Leyden firm. Five years later, this firm in combination with another (also of Leyden) published the *Physica* as an appendix to Bontekoe's intermitted *Metaphysica*. There appeared at the same time an older form of this compendium, acquired through the agency of one Caspar Langenhert of Franeker.

After these, there are contributions by three more publishers. The famous Amsterdam house of Jansson-Waesberge republished the *Ethica* again three more times (1691, 1696, and 1709); part was taken in the publication of 1696 by the preachers, Flenderus and Hazeu.[1] The same

[1] Dr. Göppert (*Geulincx Ethisches System*, Breslau, 1883, p. 4) takes Hazeu for a "higher ecclesiastic, perhaps according to our ideas a

house also published the *Collegium Oratorium* from Bontekoe's copy, which was in the possession of an old fellow-pupil. Another Amsterdam bookseller, Joh. Wolters, added the *Metaphysica* in 1695. In 1698 Wolters reprinted the *Logica* according to the *editio princeps* of 1662, but without mentioning this. The editions published by Dirk Goris of Dordrecht form a third group. For all of these we probably have to thank Antonius de Reus (inscribed at Leyden, 24th April, 1668, as a student of law and as twenty-three years old). They embrace the *Annotata praecurrentia* and *majora* to Descartes' *Principia;* a collection of theses defended under Geulincx' presidency in 1690-1; and Dutch translations of the *Metaphysica*, *Physica*, and *Ethica* from the printed originals (1696 and 1697). After the Wittenberg *Ethica epitomata* —which, by the way, M. Vander Haeghen (p. 209) cites as a neuter plural—a Dutch abstract appeared at Groningen in 1722. This, however, was one of those theological refutations that at length deprived the *Ethica* of its hitherto uncontested fame as a book for edification. It was now obscured by the rise of Ruard Andala and of the Halle professor Christian Thomasius. The name of the Flemish thinker thus became for a time half-forgotten. The later inquiries into the fortunes of Cartesianism have been needed to bring it once more into the light of day. From writings that have hitherto been imperfectly obtainable, these inquiries have provisionally established the importance of Geulincx among the protagonists of modern science; but the whole material for judgment has never yet been put under the eye of the investigator in a convenient view. Before we can finally decide upon Geulincx' place, we need a full collection of his widely scattered works.

Everything necessary for such a collection has at length, after long endeavours of my own, been put at my command by the exact references of M. Vander Haeghen; and, having

superintendent" at Oestgeest. "The village," he says, "appears to be no longer in existence." As a matter of fact, village and church stand now where they did then by the highway to Haarlem, and an "antistes" is simply a clergyman. Higher ecclesiastics no protestant church in the country has ever known. Again Prof. Minor, in his book on Schiller, makes the father of the poet visit "the flourishing towns in the Hague," as if that residence were a whole district. If writers cannot get correct information on such matters, they might at least refrain from superfluous explanations. What is of more importance is that Hazeu ("Hassen," in Vander Haeghen, p. 216, is a misprint), had defended, as a student, a treatise of Geulincx *De finibus bonorum et malorum* on the 14th of March, 1668. Flenderus had studied elsewhere, and was a preacher and titular professor in Zutphen.

collected the works, I have undertaken to prepare the complete edition of them. Besides the printed works, I have at my disposition a clean MS., found a few years ago, now in our University-library. Here an unnamed admirer has preserved for posterity the whole series of the prælections delivered at Leyden, and for the most part in a purer text than the earlier editors possessed. The MS. comprises the remarks on Descartes; the *Collegium Oratorium;* the *Metaphysica*, *Physica vera* and complete *Ethica;* a *Physica ad mentem Peripateticorum;* remarks on the printed *Logic;* a *Collegium Medicum;* a tractate *De Officiis Disputantium;* paradigms for disputations; also collected schemata and phrases from Cicero. There would be no purpose now in including these *collectanea*, any more than the medical compendium and the *Annotata præcurrentia*, which offer nothing original. The rest will fill three volumes. These will appear in similar external form to the edition of Spinoza prepared by me in collaboration with Van Vloten. The expenses will be defrayed from the balance remaining over from that undertaking. Considering the historical and spiritual relationship between the two thinkers, the managing committee of the Spinoza Memorial thought that it would best consult the intentions of the contributors by making use of the remainder to facilitate the comparison of Spinoza's thoughts with those of his neighbour and nearest precursor. The name of the publisher, Martinus Nyhoff at the Hague, is a guarantee for the technical execution.

The first volume will embrace chiefly what Geulincx himself made public, in chronological order. After a biographical sketch there will follow: (1) the Discourse of 1653 and the *Quæstiones*—both in the latest revision (1665) with specification of the older readings; (2) the Discourse of 1662 and the *Logic* together with the elucidations preserved in the lecture-volumes; (3) the *Methodus* and the tractate, related to this in subject-matter, upon the duties of disputants, from the same source; (4) the inaugural address of 1665.

The second volume will contain the systematic works. These, it is true, only appeared in the form of lectures, but it is highly probable that they were intended to be given to the press after a final revision. Under this head come (1) the *Physica vera*; (2) the hitherto unknown *Physica ad mentem Peripateticorum*; (3) the *Metaphysica*; (4) the *Ethica.* The first ethical treatise was published by the author in 1665, but without the notes.

There remain, for the third volume, writings which were

doubtless only meant to serve the momentary aim of the teacher, but which have value for us because they give the philosopher's view upon points to which he found no opportunity of addressing himself before a larger circle. They are (1) the *Annotata majora* to Descartes, and (2) the theses, which were only printed as occasional writings for use in the auditorium. Of the first edition of these, so far as I know only one copy has been preserved in Berlin. The *Collegium Oratorium* will be printed as an appendix.

Care will everywhere be taken, by solicitous comparison of the existing texts, that the reader shall have complete command of all the sources still available. Only manifest slips of the pen and errors of the press will be corrected. Plainly inappropriate punctuation will be replaced by a more intelligible one. Generally, the procedure will be such as the duty of an editor of papers left by an author would require. May the whole work contribute to bring a not unimportant chapter in the history of philosophy nearer perfection, and to atone for what his time, in its ignorance, failed to render to a candid seeker after the highest truth.

LEYDEN, *May*, 1890.

V.—DISCUSSION.

ON THOUGHT-RELATIONS.

By Arthur Eastwood.

In Oxford, at any rate, Green has left his impress, and there is perhaps nothing in that University which bears more constant testimony to his influence than the prevalence of the expression "thought-relations". That puzzling term is interwoven with the whole of his writings; his disciples seem unable to stir hand or foot without it; surely, to understand Green that is the first word which needs to be thoroughly explained. But it is a need for which I have never been able to get satisfaction from a professed Greenian; once bring him to the point and keep him there—if you can—and he will boldly avow that "relations" are his ultimate and inexplicable datum, simple elements, the source at once of all reality and all explanation. This refusal or inability to explain is not very encouraging, to say the least; when we turn to the dreadful misunderstandings it has provoked, it is seen to be positively calamitous. Green has been accused of building up a metaphysical system out of logical abstractions, of confusing that most simple and obvious of distinctions, the difference between thought and things. His school have been reminded that "living dogs"—meaning atoms and "real things"—are better than such "dead lions" as categories and thought-relations —and much more in the same strain. I will not attempt the long and hopeless task of trying to convince people that the "common-sense" and the philosophic stand-points are not the same, that Green was not so insane as to try to construct material objects out of immaterial thoughts or think that philosophy could possibly detract from the tangibility and concreteness of the real world. I only mention such criticisms to show that, when philosophers—and honest idealists too—are so distracted by Green's machinery of relations and their spiritual principle that they feel impelled to write such profanity, the philosophy of relations cannot be quite so clear as it ought to be. Leaving materialism alone, I will try, starting from the principles generally accepted by Idealists, to discover where the mischief lies.

We will not deny that there may be some perfectly just use of the terms according to which the Real may be said to be identical with the Thinkable. Such a theory may mean much or little, be true or false; all depends on how it explains itself.

It may be not unfairly said that the search for an elucidation of this view of Reality was Green's great problem, and that he considered the key was to be found in his "relations". "What is

known consists of nothing else than relations," and relations "constitute the very essence of reality". Being the constituents alike of objects and of ideas they dissolve at once the illusions of a "matter *per se*" and "mere subjectivity".

And how does he discover these potent solvents of perplexity? By an easy path. All but very perverse opponents of Idealism will admit that we can talk of nothing as real unless we make it an object of thought; and—as this truth continues to hold good, however many the titles to independence with which (within our circle of knowledge) we may dignify an object, *e.g.*, substantiality, independence of perception, unthinkableness—we may go further and say "a thing is real only in so far as it is an object of thought". Now thought, we are informed, is essentially a relating faculty, *i.e.*, its only way of "creating an object" is to bring it into the context of experience. This result is attained by a process of definition. Thought is stimulated to make fresh observation of a one in many, to institute among the elements remembered as constituting objects of past experience new comparisons of identity and difference, leading perhaps to the observation of elements previously overlooked; it is in these fresh relations and combinations of relations that the reality of the new object resides.

If we are tempted to demur with the protest that, somehow, the concreteness and individuality of our object has been made to vanish, we are triumphantly asked, "Can you then point to any feature of a thing's existence which, *per se*, possesses reality, which does not owe the whole of its significance and its concreteness to its relations with everything else?" I think that, if we are wise, we must admit that we cannot. Still, even when we yield to the relatedness of everything, we are none the more disposed to submit to the metaphysical inferences which Green proceeds to draw. Our dissatisfaction may find many forms of expression. The most natural is—Relations must be *between* something; therefore they presuppose the reality of something other than themselves, *viz.*, of the points between which they hold. But if we follow out this line of thinking we shall only end in a dead-lock. For what is this prior reality which we attribute to our "points"? Is it a reality of unrelatedness, the negation of relativity? If and in so far as it is, it is a reality of the unknown and unknowable and therefore cannot enlighten but only obscures the mystery of relations. It is futile to practise evasions by trying to impart to the "points" a positive meaning of their own. No, they derive all their colour from the concept of relations which they negate, and a bare negative is, we all know, a logical chimera as useless as it is unreal. It is on victories over attacks of this sort that Greenians are wont to plume themselves; and a very short-lived glory it is. For when they exclaim "Of course, those points are themselves constituted by relations," we may follow up their words with—"Very true; but, furthermore, these latter relations themselves imply points of relatedness between which they hold;

these points, again, are 'constituted by relations,' and so on *ad infinitum*; and so here as much as before we end in the unknown".

There are two other expedients for summarily disposing of relations which call for remark. One is borrowed from Lotze. It is only the mind, that philosopher informs us, which introduces its fiction of "relations" existing "between" things; in reality, we have no "between" and no "mere relations"; everything is in direct reciprocal action. But all Lotze's bold talk about "the real" being more than the "thinkable" and the laws of cognition being subordinate to the laws of reality comes to nothing. In his theory of religion, where he gathers together the results of his metaphysic, he sees reason to retract it; for he finds that every thing has its whole subsistence in God, and with God thought and will = reality. He protests against the notion that a thing or person could gain anything by being made external to God, and, in his crowning idea of the immanence of everything in the Divine Mind, arrives after a long and tedious journey, at the point of view from which Green started.

The second device, the same at bottom as the first but less refined in its formulation, is to charge Green roundly with confusing logic and metaphysics. The "relations" and their "subject" are supposed to be abstractions, barren universals, void of the one characteristic indispensable for all reality—individuality. The obvious answer is that Aristotle's proposition "The individual alone is real" might, by this time, be taken for granted; but by individuality we usually mean a union of universal and particular—in Hegel's language, or, in plain English, a reference to actual experience. We should be loth to endorse such statements as these: "When existence is in question it is the individual, *not the universal*, that is real"; "The self is metaphysically a principle of isolation". It would be suicidal for Reality to wish to cashier the Universal. But most astounding is the discovery that Green's Divine Mind is "an hypostatised abstraction" reached by "converting an identity of type into a *numerical* unity of existence". It is indeed news to find that it is the business of philosophy to treat "existences"—whatever they may be—as numerical unities. It scarcely needs a reference to Hegel's classification of concepts, where number and its relation to quantity are elaborately discussed, to convince people of the obvious fact that numerical relations are only applicable to quantities, that the subject-matter of philosophy is not—unless we would return to the crudest beliefs of atomism—a quantum, but lies in a far different sphere. Kant, too, ought to have precluded the possibility of error. He has carefully distinguished the synthetical unity of apperception, which is qualitative and the supreme condition of all conceptions, from the quantitative unity which holds a place in the categories. Surely, it is rank absurdity to adopt a theory which would, in Kantian language, amount to a postulate that all metaphysical concepts of existence must be thought under the schema of

number. It cannot seriously be a metaphysical demerit in thought relations that they are not numerically isolated.

Let us try again. "Relations" are proof against the clumsy shafts of a disguised materialism; still, if we cannot overcome the reluctance to believe that reality is nothing more than a "single and unalterable system of relations," it is worth while to open the question *de novo*, from a more sympathetic, that is to say, an idealistic point of view. But we must not be too precipitate. There is another charge, indirectly levelled against the relation-theory, with which we must first disclaim complicity. Here the vulnerable point is considered to be Green's reduction of sensation to "occasion" for the exercise of thought. Certainly, Green's theory of sensation is incomplete, possibly shaky; but its shortcomings afford no ground for attack on "relations"; they give no excuse for a return to the habit of treating the datum of sensation as an alien something given to thought. In dispelling illusions of this kind, Green, in his Introduction to Hume, has done a lasting service which ought to have silenced for ever the attempt to supplement the deficiencies of thought-relations by the data of sensation. No line of separation can be drawn between the thoughts and the sensations of a conscious being. Every sensation is—and is real only as—a thought (though all thoughts may not properly be described as sensations). Green has established so much, quite independently of his peculiar doctrine that sense is only an occasion or stimulus to the exercise of thought and a limitation, inherent in finite beings, to thought's development. This latter point touches a problem with which we are not at the present moment concerned—*viz.*, the question, Is there a distinction in kind between human experience and the Thought of an Infinite Being (supposed to be free from sensations)? It is sufficient here to maintain that it is thought alone—and thought of a kind not different from the cognition, *quâ* thought, of sensitive beings—which makes experience.

Having gone so far with the advocates of thought-relations, we may now, with less danger of being misunderstood, turn round and challenge them. What right have they to set down the sum total of the work of thought as the constitution of relations? Granted that such is a constant mode of its operations, does not thought perform a great deal more? Or, if the Greenians will not be offended, let us put the question a little more personally. They avow Hegel as their master; it is agreed by their friends and their opponents that their writings are little more than a reproduction in English dress of portions of the Hegelian philosophy. Why then, with such a wealth of material before them, have they so greedily pounced upon one tiny fragment of Hegelian thought, expanded it to such dimensions that it dwarfs every other consideration into insignificance, and given it to the world as a completed philosophy? The explanation cannot be

that Hegel overlooked thought-relations or was not fully aware of their importance. Witness this quotation from his *Logic*:—"Everything that exists stands in relation and this relation is the veritable nature of every existence. The existent thing in this way is not solely on its own account, its being is in something else; in this other, however, it is the connexion with self, and relation is the unity of the connexion with self and the connexion with something else." May it not more conceivably be the case that, instead of blaming Hegel for making so little of thought-relations, we ought rather to express our apprehension that Green and others have shown a tendency to exaggerate their importance?

Hegel, like his modern followers, is concerned with an analysis of experience and holds as unreservedly as any of them that experience is constituted, out and out, by thought. But when the inquiry arises, What are the essential features of thought? Hegel's answer occupies a whole book crowded with subtle distinctions and gradations of a multitude of categories, of which relation is but one among many; Green's reply is complete in a word—the constitution of relations. And the gain of this sweeping brevity must, in the long run, inevitably be outweighed by the attendant loss. It provides ready to hand a potent solvent (borrowed from the commonest and most characteristic of the operations of thought) for the *cruces* of materialism; but a constructive philosophy, by which I mean one which is to give an adequate explanation of the world, cannot be made to do any work of its own—at least not to progress—when once it is caught in the net-work of relations. The flaw is not far from the surface. Relations, after all, are not fully adequate to themselves; Green finds it necessary to call in to their aid a condition they imply—a spiritual principle or eternal subject. His instinct is true, but very misleading in its consequences when it induces him to believe that the combination of the two—relations and their subject—gives at a stroke a completed metaphysic. The transition from relations to spirit (with which may be compared the Hegelian passage from Essence to the Notion) is valid enough; but it must be remembered that it is a long journey from the first manifestations of conscious spirit, awakened by a feeling of the inadequacy of nature, to the perfection of an absolute Being. It is by a harsh and unnatural conjunction that the Supreme Intelligence is described as the subject of relations; the conjunction detracts from the dignity of God and impoverishes the world of spiritual truths. When we view the world under the category of relations, we are still in the sphere of Nature and Necessity. The passage from relations to a Perfect Being can only be accomplished by a series of gradations, the omission of which makes the transition arbitrary, because abrupt. What is the cause of Green's neglect to fill up the gap? It seems to me that Green in the *Prolegomena to Ethics* has spent so much time in scoring an easy triumph over the supposed Kantian

identification of the thing-in-itself with the unknown cause of sensation that he has overlooked that more interesting and valuable interpretation of Kant (to which he himself in his Essays on Kant refers), which would make the noümenon equivalent to an expression of the need for something on the objective side which should balance the synthetical unity of apperception. From the latter way of thinking, may we not, while avoiding the pitfalls of materialism, derive the lesson that Green's supreme subject is—not exactly an hypostatised abstraction but—deficient in objectivity, *i.e.*, that it needs to realise itself in other forms of spiritual truth before it can claim to rank as supreme?

Taking the theory as it stands, the first danger which threatens relations and their subject comes from the problems of infinity.

Every philosophy is compelled to bring in somewhere the conception of Infinity, but whether a philosophy is to be good or bad depends on the "where" and "how". Here again we may refer to Hegel for assistance. Hegel is especially vehement in his scorn of the infinity which is a mere progression *ad infinitum*, and of the absolute, which is no better than the unknown. Yet Green's method appears to involve an unhappy combination of these two shattered objects of Hegel's withering contempt. Since a thing = its relations, and since the possible relations which can affect it are infinite—nay more, as being a member of a "system," the relations which constitute it are, *ipso facto*, infinite—it follows that nothing can ever be fully known. "True," says Green, "to a finite being, but" (and here he thinks to save the endless regress) "to the Eternal Mind these relations are always present in their totality, comprising a fixed and unalterable system." Now here we are bound, in the interests of true thinking, to play the sceptic, and to interpose with the objection that the reference of relations to the Eternal Mind as their subject is, in so far as those relations have never actually formed part of any human experience, a reference to the unknown, and therefore is, on grounds of strict reason, illegitimate.

The two methods of removing this obstacle are fraught with danger. We may either face it out with the assertion that our subject is indeed, in the last resort, an hypothesis, but the one hypothesis which alone will solve the problem of philosophy. Or we may appeal to faith. But faith, called in as a foreign ally to the impotence of reason, bringing its "feelings of immediate certitude," is a sorry substitute for the genuine religious faith of which the dictates are most real because they are most truly rational. In either case the consequences are the same. We have given our "subject" an unlawful priority; and whenever we would deduce from it the reality of what is otherwise unknown, we are setting ourselves the hopeless task, in which the German Neo-Kantians so splendidly failed, of trying to derive the finite world as a necessary consequence of the Infinite God.

I am far from being actuated by a distrust of what is spiritual

and divine. Quite the contrary. But I would insist that we must not extract from our data more than is contained therein; and, in the interests of religion, I would urge that, if we make "thought-relations" our sole metaphysical data, we are logically debarred from ascribing to our supreme principle a whole hierarchy of spiritual truths to which it may justly lay claim.

Perhaps I may be charged with leaving something out. Besides treating of "relations" and their "subject," Green also alludes to human beings. It may be thought that, by the help of the light thrown from our knowledge of the finite mind upon the Divine, Green's picture of reality may be viewed as complete. The hope is doomed to disappointment. I think no one can read Green without feeling that his conception of the relation between man and the one Intelligence is obscure and illuminates neither the nature of man nor God. The confusion may be briefly indicated in the words "necessary vehicle". Nature is a vital part of the essence of God, and we are led to believe that sentient human beings are *necessary* to the reality of the one mind; then again we have the theory that sense is a mere occasion for thought, and we are told that human experience, which is of course sensitive, is only a *vehicle* for realising what is already fully realised by God. If a thing is necessary, it is more than a vehicle, and, if a mere vehicle, it is not necessary. Between these two notions Green's conception of man oscillates about a pivot incompatible with true equilibrium.

"Relations" are lost in the haze. Man knows a small part of the world of relations and gets to know more piece-meal; the divine intellect knows them all—once and for all; that is the difference between finitude and infinity. What an infinity have we here! A blank beyond-the-finite. The Finite knows a little; the Infinite knows more, knows all. Nothing could be more pretentiously empty than that "all". For what are we to make of relations known to God, unknown to man? How *can* they be real? Greenians may answer as they please, but, whatever they say, they can never evade the difficulty that the question is of its very nature unanswerable. Here is an opportunity for the spirit of Locke to rise, and turn the weapons which dealt the final blow to his philosophy against him who last wielded them. As Locke cannot rescue "real substances" from the grasp of mind, so Green cannot place the objects of eternal thought beyond the pale of finitude. As long as we are men, we know absolutely nothing of the superhuman. Let us not be hoodwinked by that last cloak for looseness of thinking—"the Divine element in man". For what that element cannot do is to announce to us the self-subsistence of an "element" or "principle" apart from man; and what it can do we most cordially welcome, for it is what we have all along been driving at. It can and does proclaim to us the infinite capacities of the human mind.

If it be conceded that this is the only kind of infinite subject

which can be metaphysically established, I fear that the glory of relations has departed from them. For, as long as we believed them to be a fixed and unalterable system holding by divine right the monopoly of reality, we really had some respect for them as a power in the world; but, now we have overcome our repugnance to questioning the titles of that which claimed to work in the name of God, and found that its authority was borrowed simply from a human capacity, we may pluck up courage to give the "supreme principle which governs relations" its true and homely title of the "operative conception of the unity of experience".

There are a few services which "relations" claim the merit of performing for philosophy; is philosophy to be the loser if we shear the "relation"-theory of its embellishments? Green says the result of his view is "to overcome the separation, which in our ordinary thinking we assume, between the faculty or capacity or subjective process of experience on the one side and the facts experienced on the other". If we remove the fixity, gained by presence, in the thought of God, of the "eternal and immutable system," have we laid bare a chaos of subjectivity? Not at all. Nothing indeed is merely subjectivity; but objectivity is assured not by asking the Divine mind to work a miracle, but by appealing to the primary fact that the ultimately simple datum for speculation is neither a subjective thought nor an objective thing but cognition-by-mind-of-an-object. If the minor question is raised, Are relations characteristic of the cognising mind rather than of the object cognised? we must answer, No; if we trace the modes of thought from the simplest and most empty to the more complex and truthful, the concept of thought-relations will be found to come immediately before those categories in which the experienced world first comes to consciousness of itself (in the "notion as subjectivity," the so called "formal" laws of thought). The stage in which we interpret everything by relations marks the point where we have just surmounted the opposition between the essence and the appearance of reality, discovering that phenomena are not phenomenal of a mysterious something behind them, but contain their truth (what truth they have) in themselves. Then, in the next stage there supervenes the conviction that the phenomenal world does not in itself contain the whole of reality, that it demands something further, *viz.*, the world of pure (*i.e.*, adequate to itself) thought.

Now the important point is that this yearning for the goods of spirit—which Green so deeply felt—is not properly met by setting up a "subject" as in any way *complementary to* "relations"—however intimately the two concepts may be connected.

I think the idea that such could be the case arose from a misconception of the nature of dialectical movement. Or, to express the same thing in another way, Green was aware that a full explanation of the Real must contain somewhere the idea of

progress, but he put that idea in the wrong place; he tried to find room for it in the unknown part of the machinery of relations (*i.e.*, progress merely = man's getting to know relations already known to God) whereas he ought to have found it in the impulse with which relations, by their very inadequacy, force men to seek for truth in a higher sphere. To explain:—Hegel's doctrine of the antagonism of dialectical negatives is generally regarded with some misgivings. It is smoothed away by such refinements as:—the dialectical negative of A is *not* not-A pure and simple; if it were, the law of contradiction would be violated; the dialectical negative is really only a contrary, and all that "movement by negation" amounts to is that the partial nature of our first view of an object prompts us to supplement it by the addition of a complementary truth—such as the concavity is to the convexity of a shield. This half-hearted Hegelianism is false to its master. The third phase, the return to self, in every dialectical triplet results, Hegel always emphatically declares, in the complete absorption, the annihilation, of the two preceding terms. It is something far other, infinitely more, than a mere *addition* to our previous sum of truths; when we arrive at the third stage, our view of the first and second is completely and for ever transformed. In the growth of character, periods of discovery, fond illusion, and hope, are followed by days of doubt, rude awakenings, and despair; but in the transition may have been effected the development from boy into man; and in the light of the new experience the truths of the past are utterly and irrevocably transformed. The second stage is utterly incompatible with the first; the third does not supplement but supersedes the first two. We may view the world as a "bundle of relations" or we may view it as God; but we cannot combine the two views, because the latter supersedes the former. This is not idle subtlety. The dangers of watering down Hegel cannot be exaggerated. By levelling down the categories into one plane, we degrade the procedure of knowledge from absorption and redintegration into mere expansion. By softening the antagonism of dialectical negatives into mere contrast, we degrade reality into a fixed and unalterable system. Degrade—I say, because, when our "system" is "fixed" and our dialectical movement reduced to a mere farce, to a subjective peculiarity of finite man, we have eliminated from Reality the notion of a *process;* and to do that is to rob Reality of its very life.

Thought-relations cannot live in the rarefied atmosphere of an absolute subject. They should yield up their lesson that scientific truth leads to the truths of philosophy, and then disappear. For religion and philosophy leave science behind them not neglected but revivified out of all resemblance to its former self. It is pre-eminently the scientific method to treat experience as a system of laws and relations; philosophy too is concerned with experience and with nothing else, but its business is to find God in the world, not relations, nor even the God of relations. Surely Green

would agree with Hegel that "the throb of religious emotion in the humblest being is of infinite value". Would not he be as loth as Hegel to sever philosophy from religion, would he not hold the truly religious view of the world to be the truly philosophic? Then why not admit that when we have attained to that view we have left relations far behind?

A word more—as to the strange necessity which Green felt for reducing reality to a system of homogeneous elements. Perhaps he was influenced here by Lotze, in whose philosophy we know he took considerable interest. They seem to have been actuated by a common motive—to make philosophy more definite and tangible than Hegel left it. Green avoids the confusions between thought and things to which Lotze fell a victim (though the latter retracts them in his theory of religion); but as Lotze—feeling in doubt, as he puts it, whether Hegel meant man to be God or a mere drop in the sea of the Absolute—laid it down that the only way for man to apprehend the Idea lay through the paths of mechanism, so Green—believing that we must study the one condition through that which it conditions—thought to cognise God through relations. Have they not both taken a half truth for the whole? Let us by all means keep to facts and their bearings on one another, but let us, with Green (Essay on Aristotle), realise the Infinite, not by sight and aspirations, but by actual contact with the world. But if the Infinite is to be found only in the finite, it is none the less to be remembered that it is the Infinite which is of truth and value and not the finite, and that the world would be the most poverty-stricken and soulless place imaginable if reality consisted solely in those idiosyncrasies of finitude—relations. Relations are finite to the very core. They are the connecting links of the phenomenal world; they are also its shackles.

The goal of philosophy, the attainment of the absolute idea is and always must be vague and shadowy in its appearance to the uninitiated. The only approach to a definition of it is the experience of a life-time. In the evolution of thought the absolute is nothing short of the whole, and, especially, it is the whole *process of transition* from Being to the Idea. The more we try to externalise it or to arrest its movement, by impressing it with the immutability of thought-relations, the more it recedes from our grasp.

NOTES ON VOLITION.

By Prof. A. Bain.

The nature of Will involves several distinct questions admitting of separate treatment, and not necessarily controlling each other. The motives to voluntary action are unquestionably summed up in Pleasure and Pain, and, therefore, involve a certain amount of inquiry into the bearings of both these states. An exhaustive discussion of pleasurable and painful feelings is not needed in connexion with Volition; we may confine ourselves to an induction of the facts of feeling-prompted action, from which we can draw our inferences upon the doubtful matters at issue. The ground may be fairly covered by these three questions:—

I. Assuming for the present that the motives to the will, in its normal character, are comprehended under pleasure and pain, the question arises whether the motive power of each is a distinct fact, although somehow correlated to the other, or whether both can be resolved into one, viewed as double-sided—in other words, positive and negative.

II. How far is the *fixed idea* to be considered the true type of voluntary action? This would suppose that pleasure and pain, which of course cannot be denied as motives, operate mediately, that is through impressing an idea, to be followed by the corresponding actuality.

III. The relation of the will to disinterested action would have to be considered as an offshoot of the foregoing problem.

I will begin with a few observations on the second question.

Let us then first see what is the most comprehensive and prevalent usage in speaking of the voluntary motives. Now, it is plain at a glance that such usage points to pleasure and pain as the main arbiters of human conduct. This does not settle the dispute as to whether their operation is mediate or immediate. Some distinct criterion must be found to show men's habitual leanings in this respect. It requires to be seen whether popular forms of speech really take cognisance of the *fixed idea* in its own distinctive character, putting it forward as a standing instrumentality of conduct whether moved by pleasure and pain or in any other way. In point of fact, there are other ways, more or less prominent, of bringing the fixed idea into exercise. The mere intensity of an idea, as caused by a vivid sensation, would give it a hold, in consequence of which it would tend to act itself out, and to exclude other ideas even supposing these had the aid of a certain amount of the hedonic quality. Now, does the popular mind distinctly recognise the fact, that a pleasure, in order to move us, must work by stamping or strengthening the hold of an idea? It would be difficult to put this in evidence with any degree of certainty. Indeed, so universal and preponderating is the action

of pleasure and pain that the likelihood is in favour of immediate agency; inasmuch as cases must be frequent where the mediate link is somehow or other tampered with. The general expectation is that when we supply, as a motive, a certain force of pleasure or pain, we can count upon the result as a matter of course. The proposal to treat the fixed idea as the essential antecedent of voluntary action is, on the face of it, at variance with our reading of the usual course of human action.

That particular aspect of the will shown in the fact that the guiding influence of our sensibility to pain or pleasure is an influence from moment to moment altogether instantaneous in its working, is evidently best represented by the doctrine of immediacy of operation. It is difficult to interpose an idea at each step of the supposed agency. There is no apparent advantage in making the supposition. The only question of any magnitude that gains by it, is the question of altruism of conduct, which, however, is a phenomenon entirely additional and apart. It is the question of our sympathy and sociability, and cannot be fully disposed of in the elementary analysis of will.

The immediate operation of pleasure and pain upon the will receives decisive confirmation when we study the lowest forms of life, and the initial stages of the higher forms. The processes of the understanding in regard to ideas are, in these instances, necessarily inchoate or imperfect, and their imperfection would be felt in crippling the voluntary activity, supposing it depended on ideas. Yet there is no sign of such crippling; indeed, the conservation of life would be very precarious if the action of the will were not promptly shown under present pleasure or pain, and more especially pain.

To recur now to the first question—*viz.*, the dispute as to whether pain is to be regarded as the sole motive in voluntary action. In contending for the affirmative, it is very proper to remark that pleasure disposes us directly and mediately and under all circumstances to quiescence; which quiescence is disturbed only by some form of uneasiness, *i.e.*, pain.

Even under this view of the matter, a distinction would have to be made between two forms of pain—*viz.*, the pain of positive hurt or infliction, as in the irritation of some of our sense-organs, and the pain of suspension, intermission, or privation, of some pleasure. These two things are never confounded; and the usages of mankind have developed them into a wide-ranging series of distinctions. There is, of course, as in so many instances, a doubtful margin, where we cannot exactly say whether a state of pain is pure infliction or pure privation. The mere fact of our being accustomed to an indulgence admittedly occasions pain, when we are deprived of it. Yet, before this state is reached, the motive power of pleasure to instigate action, and not mere quiescence, would have to be interpreted as an influence of pleasure in its proper character.

When we encounter a pleasure and are aware that an exertion on our part would suffice to increase it, do we or do we not remain still? And if we do not remain still, what is the precise character of the motive at work? If expressed by pain, it is that very peculiar form of pain that shows us that being well we have it in our power to become better. This may indeed be called pain, but it has very little in common with the pain of pure infliction.

It is notorious that the state called 'appetite' brings into play both extremes without confusing them together. Indeed, language is most decisive in upholding their separate character notwithstanding their concurrence. The names *punishment* and *reward* are supposed to mean a real distinction of motive, explain it as we please.

In dealing with the supposed efficacy of pleasure in making us quiescent, instead of active, our difficulty always is to allow for the dread of overdoing the pursuit of pleasure and running upon the point of some pain. It is a matter of temperament to be more or less alive to this peculiar caution, and, where the temperament is wanting or deficient, we see the motive power of pleasure begun in its most rampant form –a form that belies the supposition of an intrinsic efficacy of pleasure to subdue, instead of stimulating, activity. The constant reproach brought against human beings is their over-pursuit of pleasure and their too little avoidance of pain, even the pains of positive infliction. The analysis of psychology would run in the teeth of inveterate usage, if it were to resolve all the power of pleasure into pain strictly so-called.

There still remains the study of the situations where either pleasure or pain, instead of being a fixed quantity (the assumption underlying the previous remarks), is supposed to be steadily increasing or steadily diminishing.

Let us suppose a pain diminishing under some movement concurring at the time, and presumably the source of alleviation. Taken on the whole, or as a general case, this is probably the most stimulating of all the situations. The primary motive power arising from the painful uneasiness is augmented in a remarkable degree. In fact, what might be the quiescence of despair under pain is here removed and an element is introduced whose potency is expressed in a great variety of terms, showing the current appreciation of its force. It is the sense of relief, encouragement, hope; it is called a mental tonic, which operates when everything else fails. It may be advantageously illustrated by comparison with the case of introducing an alien pleasure such as at best could assist us to endure the pain but would not be a powerful stimulus to action, unless indeed on the supposition that pleasure operates independently. If the standpoint of unity of motive were to be preferred, the influence of lessening pain would be the most favourable supposition; at all events, it would be found to be the most efficacious of all the stimulants to activity.

Here, however, comes in the collateral tendency of pain to reduce vital energy in general, and motor activity in particular. For, testing fairly the play of motives, we must assume the system to be in an average equipment for any required exertion. It must not, on the one hand, be depressed or exhausted, so as to be beyond the spur of pain, nor, on the other hand, so exuberant as to be on the outlook for a pretext or an occasion for expending its wealth. Under an ordinary or *mean* condition, a pain or uneasiness would undoubtedly act as a stimulus, and that in proportion to its intensity or degree. Activity would be instigated and would continue so long as the pain continued and energy was forthcoming. The final upshot would appear as one of three alternatives. (1) The action might simply have no effect in the way of alleviation. Nevertheless, if both the pain and the strength continued, action of some kind would go on until one of the other alternatives arose. (2) It might be felt that the pain was increasing; whereupon, if the increase seemed to be strictly concomitant with the movements so as to appear cause and effect, there would be a decisive prompting to stop. (3) The movement instigated might consciously alleviate the pain, and the consequent stimulus would be to continue it, or even to increase its amount. Now, of these last two cases, which is the more potent motive, on the supposition of an average or normal example of each? We put aside the case of failure of active power through the growing pain, so as to obtain an absolutely fair comparison. The decision lies between the energy of the stimulus to stop when pain is increasing or to go on with increase when pain is diminishing. Both are unquestioned and energetic motives, yet, possibly, they may be too near equality to admit of a perfectly exact estimate as to relative strength.

Recurring to the observation that relief from pain operates as a decided mental tonic, we are thrown into a nice computation of the bearing of the circumstance on the increase of vitality as shown in executive power. There is, however, something common to the two previous suppositions—namely, the fact that the stoppage of the movement that is increasing the pain leads to a stoppage of that increase, resembles the abatement supposed in the alternative situation. Still, to be arrested at the point of not adding to the pain is evidently an inferior condition, as compared with continuing a movement that is reducing the original amount. Whatever may be the result of analysis in its highest subtlety, this last situation is popularly accounted the superior in point of motive energy. The only ground for not deciding absolutely in its favour is the remark already made as to the increase of active efficiency apart from strict motive power.

Whether or not the situation of relief from a felt pain by concurring movement is the most absolutely potent variety of voluntary motive, the question may still be put—Is it the fundamental or all-embracing type of voluntary action, into which the

other types may be resolved, being thereby made out to be derivatives? Before answering, we must view the two remaining situations—*viz.*, a growing pleasure and a diminishing pleasure.

To do justice to these two forms of motive, we must assume that we start from a state of quiescent indifference and full contentment. Any state of contentment or indifference, although free from motive power as such, would not remain unaffected by an access of pleasure supervening. Of course, on the supposition that pleasure tends to quiescence, we might simply appropriate the addition to our enjoyment, and do nothing to obtain a further increase. We might, so to speak, take what comes and be satisfied, and repeat the same attitude with every new access or increase—like Macbeth, in his feebler mood, when he seemed to be shrinking back from the murder, leaving it to the fate that predicted his being king to make him so. As already remarked, this is no doubt a possible situation, occasionally realised; but it is always open to the suspicion of an underlying motive of caution against risks. What it would be, if there were absolutely no dread of throwing away an actual good to secure a possible increase, it is extremely difficult for us to decide; we can only proceed by the method of concomitant variations, which, as already seen, shows us how ardent is the pursuit of pleasure in the incautious temperaments. Moreover, when the supposed increase is something considerable, we are apt to be thrown off our balance of precaution, and then the ardour of pursuit would appear to manifest itself in purity, and so attest its magnitude as a motive. Still, the influence of the tonic already mentioned is to be counted for such a case; yet not without qualification, seeing that the pleasure may be of the nature of stimulation at the cost of vital energy or increased power.

There remains now the concluding alternative, the obverse of the foregoing—*viz.*, a diminishing pleasure in concurrence with some form of active exertion. Doubtless, if the pleasure were an element in our state of contentment, or a *conditio sine quâ non* of our quiescence, then its loss would scarcely differ from a case of painful infliction, or, at least, it would be an example of the doubtful margin.

It is impossible to discuss this thesis in all its extent without becoming aware of the great differences among pleasures themselves, differences that might be conceived to have no bearing upon the theory of Will, but that in all probability have a very serious bearing. The pleasures of Sense, strictly so-called, have probably a common character as regards will; but, when we pass to Emotion, we find very important peculiarities. Take, for example, the group of emotions including power, victory, revenge and malignity—in short, the whole cycle of the situations connected with the fighting impulse. We find it very difficult to adapt these to the view that the stimulus of the will is uneasiness pure and simple, and that pleasure, as such, leads to quiescence and contentment.

To say the least of it, a very great strain must be put upon the facts to establish such a position. The possession of power, the gaining of victories, the tasting of malignant gratification, notoriously urge us to seek for more. The case of Alexander is typical of the whole range of human experience in this field. If there were a tendency to quiescence under the spur of a great victory, or the attainment of a position of influence, why should we be urged on, even at the expense of labour and endurance, to gain some higher eminence? Why does ambition know no bounds? why does it despise the cost of sacrifices?

Even the amicable emotions, whose nature it is rather to be calm and quiescent, instead of yielding the fury of restless excitement, are not free from the urgency to seek their own increase. Provided only that they give a high amount of pleasure with the prospect or possibility of more, they operate as motives to pursuit. What may be said in the way of distinguishing these from the foregoing is, that the fighting circle of emotions are imbedded in a greater degree of active stimulus than the amicable circle. Yet, experience proves that the energy of pursuit may be as high in the region of the amicable as in any class of feelings whatsoever.

That a taste of pleasure constitutes an impetus to seek for more may be accepted as the normal situation of the human will. If it were within the power of analysis to resolve it into the stimulus of pain or uneasiness, it would still, under the guise of a derivative fact, be recognised as a special mode or outgoing of voluntary motive. The case of an actual pain, in the form of injury or infliction, would always be regarded as distinct from the uneasiness of being held back, under a condition of integrity in all our senses and susceptibilities, from adding a second dose of positive pleasure actually imparted. When, in the theatre, the audience are shouting for an encore, it would seem, to put it mildly, a very bold supposition to represent them as in a state of pain. It is needless to repeat that such pain as may belong to the case is a species by itself, having pleasure as its foundation, and, but for the pleasure, the motive to the will would suffer collapse.

The graded scale of voluntary action may be said to range from the lowest depths of pain to the highest assignable or attainable modes of pleasure. From the very nature of things, the motive power must be at its maximum at the lower end. Pain is necessarily the prompting influence up to the point of neutrality or indifference, at which point the battle is more than half won. In going higher, there is a conflict of forces; the motive strength already diminished will be subject to still further diminution, and only a situation of growing pleasure, and that in a high degree, can furnish an efficient stimulus. Under any circumstances, motive power must die away as the upper end of the scale comes nearer.

ON PSYCHOLOGY AND METAPHYSIC.

By J. S. Mackenzie.

In view of the criticisms which have been passed by Mr. S. Alexander on my *Introduction to Social Philosophy* in the last number of Mind (pp. 114-9), I hope I may be allowed to offer a few words on the distinction between Psychology and Metaphysic, which Mr. Alexander appears to me to have not sufficiently borne in mind. In dealing with any object which passes through a process of development, it is always possible to take up two different points of view. It is possible simply to trace the process of development itself, or it is possible to endeavour to discover the ultimate principles on which that process depends. Thus, to take a simple illustration, when Mr. Spencer defines Life as "the continuous adjustment of internal relations to external relations," he is evidently stating the principle on which he considers that the development of life depends. But it would be quite possible to trace the development of life without any direct reference to this principle. If the principle is a true one, it would no doubt be brought out in any thorough attempt to trace the development of life; but in such a tracing it would be brought out as a final result and not as a first principle. The investigator of organic processes would discover, at the end of his researches, that internal relations had become adjusted to external relations; but this fact would not present itself to such an investigator as the principle on which life depends. It would simply appear as a result which happens to be brought about by vital processes. The philosopher, on the other hand, who accepted Mr. Spencer's view of life, would consider that this result appears at the end only because it is presupposed from the beginning. It is the principle by which all the vital processes are throughout determined. Now these two points of view, when applied to the growth of mind, are those of psychology and of metaphysic respectively; and it is important that we should understand which of the two we are adopting. In my *Introduction to Social Philosophy*, I was writing entirely from the metaphysical point of view. Mr. Alexander's criticisms, on the other hand, are from the psychological point of view, and he does not seem to have sufficiently recognised that my own point of view was different.

Thus he remarks in one place (p. 115) that "ends or ideals are nothing but the formulation of desires," and consequently "call for no philosophy". Now it is true that, from a psychological point of view, an end or ideal appears simply as the formulation of a desire. Thus when the logician sets up for himself the ideal of nature as a uniform system, and considers that all the seeming

accidents and vagaries of natural phenomena are to be interpreted in accordance with that principle, it may be said, from a psychological point of view, that the logician is simply formulating an intellectual desire; and we might no doubt be able to trace the growth of that desire in accordance with psychological laws. Nevertheless, I cannot admit that the existence of such an ideal "calls for no philosophy". Subjectively regarded, it may be simply the formulation of the logician's desire; but objectively regarded, it must be held to have a validity which is altogether independent of desire. Its objective validity, moreover, is properly speaking prior to its appearance as a subjective desire. It is a desire which has an intellectual origin—*i.e.*, its appearance as a desire is dependent on a certain apprehension of its validity as an objective principle. It is not a desire which exists in the savage. It is not, indeed, a desire which exists in any one but the reflective logician; and however far its origin in his mind may be traced back, the ultimate explanation of it must be found in the demand for a certain unity in the world of his experience, which is not merely a desire on his part but an objective principle involved inevitably in the nature of things. The explanation of such an inevitable principle must be metaphysical, not psychological. Now in every end or ideal there is some such inevitable principle involved. There are, no doubt, some ends which are capriciously chosen by particular individuals, or which are forced upon them by the pressure of external circumstances. But such ends as these are not ultimate ends: they can be shown to depend on other ends which are of a more far-reaching and a more objective character. The ultimate end by which our desires are determined depends not merely on a process of psychological development, but on the inevitable nature of things. It may, indeed, be shown to grow up in the history of the individual mind by a psychological process, and so to present itself simply as "the formulation of a desire". But this is not a complete explanation of it. The end presents itself, from a psychological point of view, as the terminal point in the development of desire; but metaphysically the desire is dependent on the pre-existence of the end (*i.e.*, its inevitable implication in the nature of things, or in the nature of an intelligible world), and not *vice versâ*.

Again, at the bottom of p. 116, Mr. Alexander objects that "it seems strange to treat as what is characteristically human that which can exist in consciousness only under exceptional circumstances". It would be strange, certainly, if one were writing from a psychological point of view. It would be strange to describe a ship as sailing towards America, if, during the greater part of the course its bow were pointing in quite other direction. Just as Mr. Alexander says that "not all men are burdened with this consciousness of a cosmos of experience," so it might be said

of such a ship, that not at all points of its course is it burdened with any tendency in the direction of America. Nevertheless, it may at bottom be just that tendency by which all its tackings are determined; and, in like manner, it may be true that the "consciousness of a cosmos of experience" is the silent presupposition of all the efforts of human life. For the psychologist in the one case, as for the chronicler of the ship's log in the other, it is not necessary to take any account of these ultimate truths; but the metaphysician and the captain must take a different view.

Similar remarks would apply to what Mr. Alexander says, on p. 117, with reference to the value of pleasures. "The sense of value of the pleasure," he says, "is *founded upon* the difference in quality, but is itself the product of growth, and does not belong to the pleasure[1] as such; and the word preferability must be understood as being used only in an anticipatory sense." From the psychological standpoint this seems to me to be on the whole true; but what is anticipatory for the psychologist is for the metaphysician primordial. "The pleasure of drinking and that of thinking," to take Mr. Alexander's illustration, may not in particular cases differ very widely from each other. The pleasure of drinking may consist largely in its being an intellectual stimulus; while, on the other hand, the pleasure of thought may be little more than a species of intoxication. From a psychological point of view, therefore, it may not be of much importance to distinguish between the qualities of such pleasures. The distinction may be only anticipatory; it may lie simply in the fact that the pleasure of thinking has a more abiding and universal interest than that of drinking, and the knowledge of this fact need not be involved in the particular pleasant experience itself. But from a metaphysical point of view this distinction is involved from the first. What has value for our consciousness as sentient beings is from the first essentially different from that which has value for our consciousness as rational beings. From an ethical point of view, also, this distinction is one of fundamental importance.

[1] I may just remark in passing that Mr. Alexander does not seem to have observed that I use the term "pleasure" (though with some reluctance) in a different sense from that in which it is employed by him. He uses it for agreeable experience, whereas I use it exclusively for the agreeableness of an agreeable experience; and this agreeableness I conceive to be simply the sense of its value for consciousness. Consequently, while it is quite competent for Mr. Alexander to speak of "the sense of value of the pleasure," it would not be allowable for me to use such an expression. For me the pleasure is *nothing but* sense of value; and consequently the sense of value not only "belongs to the pleasure as such," but *is* the pleasure as such.

VI.—CRITICAL NOTICES.

Animal Life and Intelligence. By C. Lloyd Morgan, F.G.S., Professor in and Dean of University College, Bristol. London: Edward Arnold, 1890-1. Pp. xvi., 512.

At the Editor's request I undertake to review this book, for the double purpose of considering the author's views on psychological questions in general and his criticisms upon my own psychological works in particular. As thus restricted, the present notice will have reference only to the second half of Prof. Lloyd Morgan's treatise—namely, that which deals with "Animal Intelligence," and the relation of this to the human mind. But I may nevertheless spare a few words to express my admiration of the first half of the treatise, or the part which has to do with "Animal Life". For Prof. Lloyd Morgan is not only a well-informed naturalist: he is also a philosopher, gifted with a thoughtful, a judicial and a logical mind, who is able to state the processes and the results of his reasoning in a terse and a lucid style. Bringing all these qualifications to bear upon the present-day problems of biology, he gives to the general reader, as well as to the professed student, the best discussion of some of these problems that has hitherto appeared. This remark applies especially to his chapter on Heredity and Weismannism, where the critical and impartial character of his thought is displayed to most advantage.

But, leaving aside all the portion of his book which is devoted to natural history (in the largest sense of this term), we may be prepared from what has already been said touching his qualifications as a scientific and a speculative writer, to expect that in the domain of psychology what he has written must be well worthy of attention. And this expectation will be fully realised by anyone who reads the second portion of his work—if indeed his competency to deal with the more recondite questions of mental philosophy does not happen to be already known to his reader through his earlier essay, *The Springs of Conduct.* (See Mind xi. 125).

The chapters with which we have now to deal begin with one upon "The Senses of Animals," which, of course, is chiefly morphological and physiological. It gives an excellent *résumé* of what is known touching the organs and faculties of special sense, &c., as these occur throughout the zoological series. The subsequent chapters are concerned with human and comparative psychology, mental evolution, and theories of the relation between body and mind. It is needless for present purposes to say more upon our author's treatment of the topic last mentioned, than that he concludes in favour of monism, and proves himself a singularly able advocate of its principles.

Coming then, after these preliminary remarks, to the subject-matter which I have more especially to review, it may be stated at the outset that, in all its main features, his psychological system appears to be almost identical with my own. For this reason I will abstain from bestowing upon it any expressions of approval or disapproval, except in places where I think either that it improves upon the latter system or, on the other hand, does the opposite. And it is the easier for me to make this exception, inasmuch as the writer is everywhere careful to point out the resemblances and the differences between the two systems. I shall only allude to the resemblances in those comparatively few places where it appears to me that they occur although to Prof. Morgan it appears that they do not occur.

There is one matter of the highest generality which may be noticed *in limine*. Prof. Morgan has now abandoned the position of extreme scepticism which characterised his writings of some years ago. For he then argued that, as our only possible knowledge of mental processes on the part of the lower animals is derived from their corporal movements, when these are interpreted through "ejective" inferences from mental processes of our own which are associated with analogous movements, it follows that we can really have no knowledge of "animal intelligence" at all, but only a hypothetical projection of our own mental states upon no less hypothetical screens, held as it were in hypothetical frameworks of lower forms of hypothetical consciousness. Of course, this position amounts to denying the possibility of a science of comparative psychology—or resolves such a science into a mere study of corporal activities, with an intentional exclusion of any interpretations of a distinctively psychological kind. And this is the consequence which in those days Prof. Morgan expressly accepted.[1] Nor, as a mere matter of logic, is it possible to refute this position. But the same may be said of the similar position when taken up by extreme scepticism with regard to any and every other matter, with the single exception of our immediate knowledge of our own individual mental states—all other knowledge being derived, or inferred, from this. Such a position, it must be allowed, is, from a merely formal point of view, impregnable; so that, if any man chooses to occupy it, there he must be left. But it is not a position that can be tolerated by the practical instincts of scientific research; because science is something more than formal logic, and, like the "common sense" of which it is the organisation, it becomes possible only on the basis of certain assumptions which, *quâ* fundamental, are unverifiable.

[1] See *Nature*, Feb. 14, 1884, art. "Is there a Science of Comparative Psychology?" to which question it is concluded, "our answer should be an emphatic negative". Compare his article two years later, in Mind xi. 174, "On the Study of Animal Intelligence".

Now the fundamental assumption which the science of psychology—human as well as comparative—has to make is, that activities on the part of organisms other than our own furnish us with indices of accompanying mental states, more or less analogous to those which in our own case are known to accompany similar activities. Of course the validity of this assumption diminishes with the remoteness of the analogy, and therefore with the distance which separates the lower organisms from ourselves in the zoological scale. But this is a question of degree as regards particular cases, and therefore quite a different question from that as to the abstract possibility of a science of "ejective psychology" in any case. All this, I take it, Prof. Lloyd Morgan has now come to recognise and accept, since otherwise the whole of the second half of his latest work would be rationally unjustifiable. And I deem it of importance to point out this change of position, because in his earlier criticisms of my own works on comparative psychology he was the most uncompromising of sceptics touching the possibility of that science; and therefore he was about the last author whom one would have expected to find himself supplying a valuable treatise upon the subject. His criticisms now are confined to questioning the validity of inferences in particular cases—such as whether activity A on the part of an animal is due to emotion *a*, or not rather to emotion *b*. So far as these detailed criticisms apply to my own writings—which, indeed, is most usually the case—I willingly allow their cogency, since it has always been my contention that ejective inferences are very literally matters of private interpretation; but the fact that Prof. Morgan now so frequently substitutes his own private interpretations for mine, is the best proof that we have come to agree upon what used to be our fundamental difference—namely, as to whether anybody is justified in drawing any ejective inference in any case. That was a difference of general principle: the other is merely a difference of particular interpretations or interpretations of particular cases.

In his chapter on "Mental Processes in Man," Prof. Morgan appears to agree with me on all points. The equivalent in consciousness of nerve-stimulation being Sense-impression, with the rise of Discrimination, Memory, and Recognition, Sensation becomes raised to Perception. This last term, being used "in a broad sense," becomes our common name for the process which is involved in the subsequent evolution of what I had called "Percepts," and what Prof. Morgan calls "Constructs," because, as he says, the former term "is used in different senses by different writers". When "Constructs" reach the level of what are commonly called "Concepts"—*i.e.*, when they are due to "the paying of special attention to certain qualities of objects, to the intentional exclusion of other qualities"—they are called by our writer "Isolates". He appears to agree with me that, in order to gain their character as isolates, these offspring of

abstract thought must be baptised with distinctive names. After that they can grow, and play their own part in the further work of helping to build the general structure of thought.

Thus the only respect in which Prof. Morgan's psychology of ideation differs from mine is in his not entertaining my doctrine of Recepts. A recept, according to my system, is that which intervenes between a percept and a concept; and it occurs in the lower animals no less—or even more—than in man. Moreover, it is produced by a blending of familiar percepts which are yielded by frequent repetition in a constant experience, as one of Mr. Galton's composite photographs—to take a physical analogy—is produced by a superposition, and consequent blending, of individual photographs. Or, to take an actual illustration, waterfowl have one recept answering to land, and another answering to water, with the result that they alight in a different manner on the two surfaces. It cannot be said that the idea of land or of water which they have is a concept, and it is clearly something more than a simple percept. Again, in our own case, when we suddenly jump aside to avoid a cab which is just about to run us down, the action is not due to any process of conceptual thought; neither is it due to any merely perceptual process: it is due to a previous fusion of many particular percepts, which have been organised by frequent association into a *composite percept*. And such a composite percept is what I have called a recept, because it has been *received* or *given*, not *conceived* or *made*. In other words, receptual ideation—which is concerned in all displays of so-called animal and infantile *intelligence*—does not depend for its development upon any intentional activity of the mind: it is elaborated, so to speak, automatically, and thus differs widely from the purposive elaborations of conceptual thought.

Now, Prof. Morgan rejects this doctrine of recepts, on the ground that the mind can never be the merely passive recipient of perceptions imposed upon it entirely from without—as a photograph is formed on a so-called "sensitive" plate. On the contrary, in one degree or another, the mind must always be active in any process of ideation, howsoever low. But in advancing this objection he shows that he has not quite understood the doctrine of recepts. For the doctrine fully recognises that, *in one degree or another*, the mind must always be active in any process of ideation. But the doctrine stands upon the fact that these degrees are so immensely varied. Even in bare sensation there must be what Lewes has graphically termed "a greeting of the spirit"; else the process could not be a *sensation*, but merely a physical change. Therefore, what the doctrine of recepts teaches is, not that the mind in any level of ideation is ever wholly passive, but that it must be comparatively inactive in all the preconceptual stages of ideation, with the result that "constructs" formed in the absence of "isolates" are for the most part formed automatically, or by the *unintentional composition of individual percepts* due to mere frequency of association in experience.

I have ended by using Prof. Morgan's own terms, because I thus hope more clearly to display that here, as in almost all other places, there is complete agreement between us. His objection to my recepts (which I still believe to represent an immensely large, though hitherto undefined, territory of the mental kingdom) is due to a misunderstanding of what they are. He has been misled by the merely physical illustration which I supplied from Mr. Galton's composite photographs, and by my having said that in receptual ideation the mind is passive. But I never for a moment imagined that the mind is a surface, or that it can ever be the literally passive recipient of perceptions formed and projected, like magic-lantern paintings, by the external world. In order to show our real agreement, I need quote no more than four or five lines. This is how Prof. Morgan presents his own doctrine. "Throughout the whole process of the formation of constructs by *immediate association* and their definition by examination, we are dealing with perception and percepts. But when we reach the stage where particular qualities are isolated, then we enter the field of *conception*. The isolates are *concepts*." Clearly this is the very distinction which I have everywhere insisted upon, although it is stated by Prof. Morgan in somewhat different terminology. If "the isolates (*i.e.*, intentional abstractions) are concepts," and if they are led up to through "the formation of constructs by immediate association," we have at one end the percepts, at the other end the concepts, and in the middle a recognition of recepts,—*viz.*, in entertaining the high elaboration of perceptual "constructs" which in the course of mental evolution precedes the nativity of a concept.[1]

The chapter on "Habit and Instinct" is exceedingly good; and easily demolishes the singularly feeble ideas of Prof. Eimer upon this subject. Moreover, in as far as his criticisms apply to my own writings upon it, I recognise them as almost uniformly valid. Here, however, as elsewhere, we are for the most part in agreement. As regards the mere matter of definition, he seeks to improve upon the one which I have given by eliminating from it any reference to a mental element—his definition, therefore, having reference only to observable activities of the organism.

[1] There is one other misunderstanding, which, although of lesser importance, I may mention. Prof. Morgan objects to my attributing "abstract ideas" to the lower animals (pp. 348-50), and justly so, "if," as he says, "we take the term in the sense in which I have used the word isolates". For, as we have seen, he uses the word "isolates" as equivalent to the word "concepts," and I everywhere insist that brutes do not attain to concepts. All that I meant by "abstractions" of qualities in the passages quoted, is what he means by "predominants," and therefore, as he surmises, his "divergence is more apparent than real". In point of fact, there is no divergence at all; and the whole passage shows the desirability of recognising the doctrine of receptual ideation, which, indeed, *is* substantially recognised in all that he afterwards says about "predominants".

But the difficulties attending any such purely objective definition are unconsciously displayed in his subsequent discussion of the facts of instinct—as, for instance, where he says, "The *satisfaction* of the *craving*—the *gratification* of the blind *impulse*—is accompanied by a *feeling* of *relief* and *ease*". On the highly important question touching the possibility of instincts being in any case due to the "lapsing of intelligence," Prof. Morgan's discussion is of particular interest at the present time. In the result, he holds that the school of Weismann has failed to make out any valid case for abolishing the principles of Lamarck; and he furnishes an ingenious suggestion which he thinks can show that, even if these principles should ever be disproved in future, "inherited habit" may still be held to have had a part in the origin and development of instinct.

I ought not to close without adding that Prof. Morgan clearly perceives one very important matter connected with the philosophy of mental evolution, touching which there is no small amount of confusion in the current literature of psychology. This is, that when a psychologist endeavours to trace the probable steps whereby the human mind has ascended from minds of lower levels, he is not therefore obliged to trespass upon the field of general philosophy by attempting to explain the mystery of a self-conscious Ego. *Quâ* psychologist, all that he has to do is to deal with the rise and development of human faculty from the purely historical point of view: the *consequences* of this *development* in yielding a human *personality* he must leave to be dealt with by the metaphysician. For example, I have myself been accused on several occasions—and even by Mr. Stout in these pages—of perpetrating an elaborate *petitio principii*, in that while undertaking to trace the genesis of conceptual thought, I nowhere explain how it is that such a thing is possible: or in other words, I have to assume the existence of the concept before I can deal with the psychology of its evolution. To this criticism a sufficient reply has been given by M. Ribot in the *Revue Philosophique*. It belongs no more to the province of a psychologist than to that of any other man of science to answer the question, How is experience possible? And if he undertakes to investigate the probable course of mental evolution from pre-conceptual to conceptual stages, it is in no way specially incumbent on him to explain the causation of mind as mind in any of the stages of evolution which it presents. Thus the criticism is neither more nor less valid than if it were objected that an embryologist assumes the existence of life before he proceeds to deal with the morphology of its evolution. Prof. Morgan is too clear a thinker to have entangled himself in such a confusion of science with metaphysics, or of psychology with philosophy; and his treatment of mental evolution in man appears to me to reach the same level of excellence as the other parts of his work.

George J. Romanes.

[See Note below, p. 304.—Ed.]

The Philosophical Basis of Evolution. By James Croll, LL.D., F.R.S., Author of "*Climate and Time*," "*Climate and Cosmology*," "*Stellar Evolution*," "*Philosophy of Theism*," &c. London: Edward Stanford, 1890. Pp. viii., 204.

The author of this book, eminent for the cosmological width of sweep which he gave to his geological inquiries, died near the close of last year, a few weeks after its publication. In many ways it is a work of special interest. Although the best part of Dr. Croll's life had been given to scientific pursuits, it is really a return to the problems that had been the first to occupy him. The conditions under which he had devoted himself to science as well as to philosophy had not been the most favourable; but, if we are to make the comparison, his interest in philosophy seems to have come to him most from nature, and his interest in science from circumstances. The present work bears the mark both of philosophical consideration applied to science and of the influence of the scientific spirit on a philosophical mind that had never become estranged from theology. So far as results are concerned, the author may be described as a theist who accepts scientific evolution in its full sense, and who places philosophical determinism at the base of this. The detailed argument is carried through with great clearness and vigour, and brings to light the interaction of new and old elements of thought that are all in their different ways powerful at the present time.

The first point to be noted is the author's clear view of the necessity for definiteness in scientific explanation, and for permanent distinctions between the different sciences. This he enforces by very decisively separating the problems of the "production" and the "determination" of motion. The process of evolution is perfectly continuous, and beneath it there is a constant ground which it is for the physicist to define. The changes in which evolution consists can all be expressed as motions, and motion may rightly be described as always "produced" by force. The history of the "production" of things may be traced back indefinitely, and nowhere is the ground of production found to be other than constant. This, however, does not exhaust the scientific view, nor even express its most important side. Molecular forces, to which all others may ultimately be reduced, have their particular directions and points of application, and enter into action at fixed moments of time. These definite and particular determinations can only be explained from previous determinations which are equally definite and particular; and those again from others. In the transformations of energy we say that the energy is the same all through. The effects, however, are different. Thermal and electrical energy, for example, manifest themselves in different ways; and it is because of their different modes of manifestation that we call them different energies. Just as we are not to call electricity a form of heat because the energy of electricity can be transformed into the energy of heat, so it is not admissible to say

that the energy manifested in organic life is merely physical and chemical because it can be transformed into various physical and chemical energies and because these energies are at the ground of vital processes. The modes of energy being different, the uniformities of connexion between them can never be all reduced to a single physical law.

This view has its application to mind also. Mental evolution, like material evolution, is continuous. What is constant in it is "mind"; but here again true scientific explanation depends on regarding mind as definitely determined. To speak of the production of acts by the will, for example, may be correct as far as it goes; but every act is a determinate act, and the determination has to be explained by something other than "will". The act of choice in its definite character is rather to be explained by the "agreeableness" or "reasonableness" of a suggested direction than the direction by the mere act. In mental even more than in natural science the definite determination, and not the mere production, is the important thing.

The idea of "determination," thus scientifically generalised, is made use of to arrive at a philosophical view of nature and mind. From the impossibility, or at least excessive difficulty, of admitting an infinite regress in the series of past events, the author infers that the world must have had a beginning. Its determination can then, as he holds, only be explained by theism. We must suppose all determination in the world to take its origin from a determination in the mind of God. The series of events in time is not eternal, but their determination is eternal. This determination Dr. Croll is led to conceive of as strictly necessary. His doctrine is therefore at once a philosophical and a theological determinism.

Dr. Croll's theism implies a teleological view of things; and this view he seeks to defend against some interpretations of organic evolution. He succeeds in showing that natural selection does not exclude every kind of teleology; though, of course, something might be said against his contention that teleology in the form of "objective ideas" of species and so forth is still required by science. The better course here, from his own point of view, would have been simply to show the independent range of philosophical interpretation. "Natural selection" itself as a scientific theory, Dr. Croll remarks in more than one passage, derives all its efficacy from being a theory of "determination". It is not a theory of the "production" of forms of life, but explains how determinate forms arise under definite conditions.

The question of Free-will is discussed in an especially interesting way. From the body of the work the author seeks to exclude it as irrelevant to his general scientific and philosophical positions. Advocates of free-will, he argues, do not really intend to deny the universal validity of the law of causation. Express discussion of the question is relegated to an appendix. Here Dr. Croll shows, in

spite of the concession made elsewhere, that the believer in free-will ought if he is consistent to deny the absolute uniformity at least of psychological law. He himself, both on scientific and philosophical grounds, refuses to admit the exception involved in free-will. Many well-pointed arguments against the indeterminist position might be quoted from the chapters he devotes to the subject. The illusory belief in an undetermined will is explained especially from the determination of action by psychological states that are not brought into clear consciousness. "I am directly conscious of the act of the will; but not, at the moment, of the manner in which it was determined." As soon as particular mental states are distinctly recognised they become, as it were, "objects," like those of the external world, and are thought of as something that is not the Ego. Then the notion arises of an exertion of will that is independent of these, as of other particular objects. An act of which the causes are not known at the moment is not, however, an arbitrary "act of will" pure and simple, but has really been determined by states that only require a new effort of introspection to bring them into clear consciousness.

When we regard an action as "our own" we hold ourselves "morally responsible" for it, however necessarily it may have been produced. It is our own action because it is the result of our own nature. The relation between action and internal nature in general is this, that "the fruit is bad because the tree is bad" and "good because the tree is good". When an action is compulsorily determined, or proceeds from something outside our own nature, we do not feel that it is our own; hence a mechanical conception of the necessity of human actions, or a conception of them as necessarily determined from outside, may tend to produce theories of irresponsibility. This, however, is not really the conception of the philosophical determinist. Necessity, in its philosophical sense, is simply "the certainty that is in things themselves". By insisting on the inevitable consequences of actions, the theological form of determinism, far from weakening, has strengthened the sense of responsibility.

This last contention of Dr. Croll's can be justified negatively as well as positively. When they apply their view to ethics, the theological and the philosophical determinist are on the same ground. Both must hold that actions necessarily determined quite rightly carry with them not merely the consequences that depend directly on the agent, but also consequences depending on the nature of men in general and on the requirement of definite means for the attainment of social ends. And the ideas of "irresponsibility" now in the air proceed really from the doctrine of free-will. Accept determinism in the full sense, and it becomes evident that some criterion of the "imputability" of an action to a person will have to be sought other than the absence of necessity; since actions are all necessarily determined either from without or

from within. On the contrary, adopt a view of guilt and merit essentially identical with that which is derived by Catholic theologians from their doctrine of indetermination, then every action that can be proved scientifically to be necessitated is at once regarded as something for which no responsibility can be imputed. The demoralising consequences that may be drawn do not, however, spring from the scientific proof of necessity, but from its combination with that doctrine of free-will which is regarded by many as the one support of moral responsibility. With philosophical determinism there is no danger of any such consequences.

THOMAS WHITTAKER.

Introduction to Philosophy. An Inquiry after a Rational System of Scientific Principles, in their relation to Ultimate Reality. By GEORGE TRUMBULL LADD, Professor of Philosophy in Yale University. New York: Charles Scribner's Sons, 1890. [London: T. Fisher Unwin, 1891.] Pp. xii., 426.

Prof. Ladd admits, in his *Preface*, that "though this book is called an 'Introduction,' no special pains have been taken to simplify or popularise its treatment". This the student would have discovered for himself before reading many pages. Indeed the book is no more entitled to be called 'introductory' in the sense of 'elementary,' than has Kant's or Green's *Prolegomena*. Like these, it is a book to be read *after*, not *before*, a course of severe philosophical study. Yet Prof. Ladd addresses the work, as "an introduction, or *Vade mecum* in reflection," not only to "the young in the later years of our higher institutions of learning," but to "the laity at large," or "all the thoughtful". Except to the trained philosophical student, however, the book will certainly prove both unintelligible and misleading. For, as the author again confesses, "the so-called 'Introduction' is by no means a perfectly colourless affair. Doubtless a system of philosophy (or at least the sketch and protocol of such a system) lies concealed in these pages. If the subject were urged to the point of a confession, it would appear that the author has views of his own to which he wishes to *introduce* his readers." Prof. Ladd has in reality two aims in his so-called *Introduction;* he is trying to kill two birds with one stone. His intention evidently is to write an impartial or objective treatise on philosophical method, and at the same time to state 'the first principles' of his own projected "system of philosophy". But the feat is quite impossible; the two purposes constantly and irritatingly cross each other's paths. On the one hand, the "system" is only "suggested and sketched"; so meagre indeed is the account given of it that the reader has considerable difficulty in discovering what it is, and has to "read between

the lines" to grasp it at all. On the other hand, the shadow of this "system of philosophy" in the background is always darkening the view of philosophical method which occupies the foreground. It is hardly till we reach the end of the book that the author takes us fully into his confidence, and gives us the perfect clue to his statement of the nature and method of philosophy. It would have been better both for the reader and the author, had the system to which the book is an "introduction" been made more prominent. These long discussions of philosophical *method* produce a feeling of *ennui*. Why not have given us the system itself at once, without such a protracted 'grace before meat'?

In spite of these defects in its conception, Prof. Ladd's book is of high value as a weighty and candid discussion, with exceptional equipment of both scientific and philosophical knowledge, of the ultimate questions of philosophy and science; and the promised "expansion and more detailed discussion" of the problems with which it deals will be awaited with interest by all his readers. The present work ought to receive special attention from the leaders of scientific thought; for it is in great part an attempt to hold the balance even between philosophy and science, and is penetrated throughout by the scientific spirit. Nothing could be more admirable than the account (in ch. v.) of the community, in method and spirit, of science and philosophy; while the intimacy of their relation is implied in the author's fundamental conception of Philosophy. He defines it as "the progressive rational system of the principles presupposed and ascertained by the particular sciences, in their relation to ultimate Reality". "It does not seek to construct the world of physical and psychical existences as a system of pure thoughts, or even to know it as such a system. It aims rather to know what these existences really are, in accordance with the growth of knowledge derived from all the particular sciences;" so that "all the more comprehensive results of induction, as they are afforded by these sciences, are contributions to the material of philosophy . . . The very life and growth of philosophy as a scientific system depends upon its appropriation of this material." Thus philosophy "draws from and deals with the whole round of the positive sciences," and is itself simply "the science of what is knowable by means of the special sciences". But philosophy "regards all these principles from its own point of view, and with its peculiar final purpose bearing upon them all. It endeavours to reduce them to system—by considering them all in their relation to a UNITY of ultimate Reality."

Prof. Ladd's scheme of the philosophical disciplines, resulting from his conception of philosophy, as explained in the above quotations, is as follows:—

- I. Philosophy of the Real (Metaphysics, in the wider meaning of the word).
  - 1. Theory of Knowledge (Noëtics or Epistemology).
  - 2. Metaphysics (Ontology, in the wider meaning of the word).
    - A. Philosophy of Nature.
    - B. Philosophy of Mind.
- II. Philosophy of the Ideal (Idealology, or Rational Teleology).
  - 1. Ethics (which considers the Ideal of Conduct — Metaphysics of Ethics, Moral Philosophy, or Practical Philosophy).
  - 2. Æsthetics (which considers the Ideal of Art).
- III. The Supreme Ideal-Real (The Philosophy of Religion).

We cannot here follow Prof. Ladd into the different departments, the detailed account of which occupies the latter half of this book. The whole discussion is valuable, but perhaps the freshest and most interesting part of it is the treatment of the ethical and æsthetic Ideals, whose objective significance is strenuously maintained. The entire argument leads up to the Philosophy of Religion, in which is grasped the supreme Unity of the several branches of Reality, as well as that of the Real and the Ideal. "That Unity of Reality in which the philosophy of nature and of mind discover the 'Ground' of all things and of all souls," is also "the Realisation of the ethical and the æsthetical Ideals". Prof. Ladd finds in Religion "the witness to the ultimate Unity of the Real and the Ideal," and in the Philosophy of Religion the justification to reflective thinking of "the feeling of absolute dependence which the life of religion instinctively cultivates". "If then we designate by the convenient but indefinite term, 'the Absolute' (or the uncouth but expressive term, 'the World-Ground') this unitary Being, who is the alone real subject of all the concrete and individual empirical realities, we are warranted in affirming: The existence of the Absolute (or the 'World-Ground') is the most certain of all philosophical truths. But there is a long way in reflective thinking from this 'Absolute' to the Being whom religious faith accepts and worships by the name of God. And it would be uncandid and unwise to affirm that all the steps of that way can be taken with a like confident appeal to the accepted results of philosophical reflection" (p. 368). Still, the conclusion is reached, after some discussion, that ethical and æsthetic considerations, added to the properly metaphysical, constrain us to believe that "the nature of the World-Ground is the highest self-conscious, rational, ethical, and æsthetical Life". This ultimate position "does not admit of 'proof' in the stricter sense of the word. It may be said, however, to be the most reasonable hope and faith of the sanest and ethically and æsthetically most symmetrical minds". While there is a wealth of philosophical suggestion in the discussion by which Prof. Ladd leads up to the conclusion thus

cautiously stated, one feels that the argument, here as elsewhere, suffers from its quasi-introductory character. The other side of the question is dismissed with a curt reference to "the failure of those philosophical systems which deny the postulate" of the self-conscious and ethical personality of the Absolute, and a few sentences about Schopenhauer and Von Hartmann.

Space does not permit of reference to the many particular expositions and discussions of great value scattered through the book. But a word must be added about the style. Its severely scientific character, added to the extreme abstractness of the discussions, gives the work an almost Scholastic air. The thinking is always 'high' and thorough; but there is a want of human interest, and the expression is defective in vigour and spontaneity. One or two curious words are used, as "inescapable," "repetitiousness"; and the sentence on p. 213, beginning "the term 'universal' we cannot understand," would prove troublesome to any of those for whom the *Introduction* is intended.

JAMES SETH.

Tonpsychologie. Von Dr. CARL STUMPF, Professor der Philosophie an der Universität zu München. Zweiter Band. Leipzig: S. Hirzel, 1890. Pp. xii., 582.

Professor Stumpf makes exceptional demands on his readers. To publish Section 3 of Part i. of a treatise seven years after publishing Sections 1 and 2 (see MIND ix. 593) is to count on fidelity of interest and on tenacity of memory. Nor is this all. A book written in instalments with such intervals of years between them is pretty certain to suffer in its structure. The new accumulations of material, and the progress of speculation, in the writer's own mind as well as in the scientific world to which he belongs, render modifications of the original plan inevitable. This necessity is strikingly illustrated in the present case by the fact that the author is driven again and again back on points previously dealt with, adding to and correcting what has already been said. All this makes Prof. Stumpf's book difficult reading. In addition to the obstacles to the reader's smooth progress thus arising out of the mode of production of the book, there are others which spring from certain peculiarities of the author's mind. Prof. Stumpf carries the estimable thoroughness of the German *savant* to a quite confusing point. His discussions of some matters, notably the various conceivable theories of fusion of tones, are prolonged to the point of wearisomeness. He appears to lack sense of proportion, and devotes as much space to a far-fetched supposition as to a quite reasonable and respectable hypothesis. To make matters still worse, the author seems indifferent to form, and frequently puts down his points, his queries and so on, in the rude manner of a memorandum book rather than

in the cultivated style of a treatise. One cannot but wonder, indeed, after reading through a ponderous volume put together in this way, whether the science of the future is going to detach itself altogether from literature. It seems hardly unfair to suggest that Prof. Stumpf, in spite of his seven years' waiting, has hurried his workmanship. Indeed, the whole book makes on one the impression of a rich accumulation of material, but very imperfectly elaborated into the form required by a treatise.

Having eased my mind of these objections to the form of Prof. Stumpf's work, I would hasten to express my high estimate of a good deal of its matter. As the first volume sufficiently showed, the author is bent on making his monograph on Tone more or less of a general treatise in psychology. Some of the most important and puzzling questions in the science arise out of an inspection of the sensations of tone, or at least connect themselves in a specially close manner with these. This applies pre-eminently to the whole theory of sensation-fusion and analysis, the subject with which this second volume is wholly concerned. Hence a thorough and exhaustive consideration of these tone-sensations and their relations, such as is here attempted, ought to constitute a first-rate contribution to the science of psychology. And Dr. Stumpf is fully aware of this, and seeks in a praiseworthy manner to bring out the general psychological results of his researches. While, as almost every page shows, an ardent and experienced musician, he subordinates his technical knowledge to the end of psychological science. The non-musical reader will probably be confused now and again by the wealth of technical observations, but he will find that it is worth while to push on for the sake of the scientific fruits of the discussion.

The first volume dealt with tones as simple and as following one another: the second takes up the more complex question of simultaneous tones and their reciprocal action. Here, however, as in the first volume, tones are viewed merely as having quality and strength or intensity, and the whole subject of consonant and dissonant combination of tones is still postponed. The more important questions discussed here are the nature and extent of fusion of tones, the analysis of composite tones or clangs, the effects of varying strength and pitch on the detection of an ingredient in a tone-compound, the theory of beats—where, of course, we get a considerable amount of physics—and lastly, the nature of noises in their relation to tones and to timbre, or, to use the German expression as anglicised by Prof. Tyndall, clang-tint. Without attempting to follow the author through his lengthy exposition of these and other matters, I shall try to indicate and estimate some of the more important results he has reached.

The *pièce de résistance* of the volume is undoubtedly the theory of tone-fusion and analysis, that is, the detection of a

plurality of ingredients in a tone-complex. In truth, the whole book may be said to be the working out of a theory of this subject. The author begins by propounding three alternatives. On a composite set of undulations striking the ear, we may be supposed to experience either (1) a number of simultaneous sensations (doctrine of plurality), or (2) a single sensation (doctrine of unity), or (3) a number of *successive* sensations, that is, apparently, successively attended to (doctrine of rivalry). The dialectical development of these three theories shows our author at his best, or, as the burdened reader of to-day may be tempted to think, at his worst. Without attempting to follow the mazes of the involved argument (in which arguments for each of the three hypotheses are first considered, then objections to each, then the arguments in favour of two refuted, and finally the objections against the remaining one obviated) it may be enough to point out, so far as this can be done with confidence, the conclusions reached by the author. He decides for the first view, *viz.*, the fact of a plurality of strictly simultaneous sensations. At the same time he makes very important concessions to the second view, the doctrine of unity. It is admitted that simultaneous sensations do somehow form a single whole—which strikes the reader very much like saying that they tend to form a unity—whereas successive sensations only form a sum. The type of perfect "wholing" is the combination of the "moments" of a sensation-quality and intensity. A less complete unification takes place in the case of simultaneous sensations of different qualities. Such "looser" unity is called by Prof. Stumpf fusion (Verschmelzung). It is important to note that in employing this word he does not mean that the sensations are indistinguishable. They really retain their separateness and can be distinguished under favourable conditions. At the same time the fusion as such constitutes an obstacle to analysis. Indeed, Prof. Stumpf seems to reduce the idea of fusion to a reluctance on the part of the constituent sensations to stand out distinctly when analysis—that is, apparently, an effort of attention to grasp a plurality of elements as such—is applied. Hence the different degrees of fusion are measured by the difficulties of analysis. The author then proceeds to show, as the result of special experimental research, that the degree of fusion, *i.e.*, the difficulty of separating constituents in a tone-complex, varies directly with the simplicity of the numerical ratio. Thus it is at its maximum in the case of the octave. The author then, in his characteristic exhaustive manner, examines the five psychological theories which in his view have been put forward or are capable of being put forward in explanation of this fusion, and rejecting them all falls back on a physiological supposition, *viz.*, of some quite undefinable nervous conditions in the auditory centre.

This whole discussion of tone-fusion strikes me as being at once

a *tour de force* in dialectics, and singularly unproductive of any clear tangible result. In spite of his prolonged effort, the writer does not, to my mind, make his idea of *Verschmelzung* quite clear. The several constituent sensations of the tone-complex are, it must be remembered, all present as individual sensations, and yet they tend to merge into a unity, which if it means anything should mean that they *lose* their individual distinctness. This fusion, moreover, is actually brought about by nervous arrangements in the centre, and is said to be the result of a specific energy (or "synergy") of the nerve-structures concerned; and such a merging of nerve-processes into a single process would appear *erst recht* to involve a unification of the correlative sensations. But if so, what becomes of the doctrine of plurality in the sharply defined form given before? As to the explanation of the several degrees of fusion in the case of different tone-intervals, Prof. Stumpf admits that he has nothing to propose, nothing, that is to say, but the bare suggestion that these nervous synergies are developed with experience, and that in this way frequency of conjoined experience (a cause of fusion which he has just before examined and rejected) may indirectly influence the result. Prof. Stumpf's whole theory of tone-fusion seems to me to be beset with the difficulties which I have previously pointed out as adhering to his psychological dualism; that is to say, his theory of sensations (and differences of sensations) existing *per se* on the one side, whether noted or not, and of attention or apprehension (Auffassung), as something wholly distinct which may come or go, on the other side. On this view, it is manifest, we must regard constituent sensations of a tone-complex as preserving their individual existence, since, as recent investigations into the detection of upper tones show, the introduction of favourable conditions and a practised attention serves to secure the analytic severance. This being so, it seems impossible to give any intelligible meaning to the well-understood expression "fusion of sensations"; and, so far as I can follow him, our author has failed to give it such a meaning, while his resort to a mysterious nerve-process seems a more than usually feeble use of the *deus ex machinâ* device. If, however, abandoning the writer's dualistic standpoint, we regard Sensation as itself partly determined by the (reflex) activity of Attention, all these difficulties disappear. Fusion becomes a reality in what I venture to regard as the only intelligible sense, *viz.*, loss of individual characteristics by the constituents of a simultaneous sensation-complex. Thus, to the ear that does not in the slightest degree detect the presence of ground and upper tones in a clang, there is a fusion of sensations. The persistence or non-persistence of such fusion when new conditions, including the maximum effort of a practised voluntary attention, are superinduced, is a further and important point, requiring to be distinctly marked off, as, for example, by the expres-

sions, reducible and irreducible fusion. But it is vain to urge all this as against Prof. Stumpf, who reasserts, in the face of criticisms of myself and others, his dualistic position (p. 221 ff.). He takes me indeed to task for a clumsy missing of the point: and he is very likely to see in any further development of my objection an "un-scholastic" looseness of thought. It is probable that we are here approaching one of those fundamentals about which there must be agreement before any profitable discussion is possible.

But we may leave this perplexing topic, and touch one or two points of interest where there is less room for difference of view. From bare analysis or detection of plurality of ingredients our author distinguishes what is commonly regarded as analysis, *viz.*, a singling out of a particular element (Heraushören). The various circumstances, intensity, &c., affecting the facility of this are carefully considered. In this connexion we have a new and interesting discussion of Attention and its function. Among other striking observations to be met with here is, that attention is nothing but a feeling of interest; that it is, a process of tension distinct from the noting (Bemerken) to which it immediately gives rise; that the so-called reflex-attention is not attention at all; and that muscular adjustment, *pace* Ribot and others (Münsterberg is not considered here), plays but a subordinate part in the psycho-physical process, the essential nervous condition being a central excitation of the sensory nerve. The question how far attention adds to the intensity of a sensation is dealt with in a very careful manner in connexion with the fixation of particular elements of a tone-complex, *e.g.*, upper-tones of a clang. Prof. Stumpf tells us that strong elements are not for his ear strengthened by selective attention, though faint ingredients are thus strengthened. May not the explanation of this fact be that, a strong sensation having as such already excited reflexly the reinforcing process of attention, there is no room for a further intensification? Another moot point dealt with freshly in connexion with tone-analysis is the possibility of a strictly simultaneous attention to two or more sensations. Prof. Stumpf, one would say, has exceptional powers in this direction. He tells us he can quite as easily fixate at one and the same moment two dissimilar tones when presented to the two ears as when presented to the same ear. He allows however that the power of such perfectly simultaneous attention to a plurality of elements is of very short duration.

After this examination of the general conditions of selective attention, our author proceeds to consider the more special circumstances conditioning the singling out of tones, such as the qualitative distance of the elements, their absolute and relative intensity, their degree of fusibility as above defined, and so forth. Among other interesting results here brought to light we have the fact that, *ceteris paribus*, changing ingredients

are more readily detected than unchanging ones. The well-known effect of a moving visual or tactual stimulus in exciting attention is thus only a case of a more general principle. Any change in a sense-stimulus, whether the local one introduced by movement or a qualitative one, renders that stimulus more powerful. As is well known, individuals differ greatly in their power of tone-analysis, and our author is able to elucidate these differences still further by help of a series of experimental investigations.

A peculiarly interesting feature in these investigations is the discovery that clang-masses tend to simulate the quality of their predominant or most conspicuous ingredient. Thus according to Prof. Stumpf a whole chord takes on the pitch of its deepest tone. This is due according to him not to the superior intensity of the fundamental note (for this is not always present) but to the fact that low tones have more of a quasi-spatial volume or extensity than high tones. This attribution to a whole complex of a feature of one of its ingredients is already an incipient form of illusion. The illusory element is still more plainly seen in the fact that the pitch of a tone seems under certain circumstances to be modified by the addition of a second note of a different pitch. The effect here is to draw the pitch *towards* that of the second note, and thus, as Prof. Stumpf points out, the phenomenon is the opposite to that met with in colour and other contrast. With respect to relations of intensity among simultaneous tone-sensations it is pointed out that, with equal strength of stimulus, high tones have more intensity than low ones (the confirmation of a conclusion already reached in the first volume); that a tone is stronger when presented in isolation than when co-presented with other tones; that a tone-mass does not make a stronger impression than its constituents. In this connexion there is an interesting account of the evidence, pathological and other, going to show that acoustic stimuli falling below the minimal intensity may by combination with other stimuli be raised to an effective height.

A chapter on beats may be passed over as of less psychological interest, and a word or two added on the treatment of noises and clang-tints with which the volume concludes. Here as elsewhere Prof. Stumpf, while drawing largely on the classical researches of Helmholtz, carries forward the elucidation of the subject by an appreciable interval. The relation of noises to tones is carefully discussed with a characteristic reference to the several conceivable theories; *e.g.*, noises are merely numerous simultaneous tones of slightly different pitch. The writer adopts a comprehensive and conciliatory view, by regarding much that is commonly regarded as noise as essentially tone, while reserving a class of noises in the narrow sense as distinct from tones. With respect to clang-tint, again, Prof. Stumpf is careful to distinguish between a looser and a stricter definition of the term.

The characteristic differences of tones produced by different instruments are due in no small part to concomitant roughnesses or other features that come under the head of noise. Timbre or clang-tint in the narrower sense is of course explained by help of Helmholtz's well-established theory of upper-tones. The chief advance on Helmholtz's view is the ascription of colour or tint to simple tones themselves and the derivation of the tint of clangs therefrom. This elementary tone-tint is referred to the pitch and the strength of the tone as its main conditions. That pitch has something to do with the recognised differences of tint is illustrated by the fact that a boy, when asked by the author which of two tones was the higher, responded, "Do you mean: which is dull (dumpf) and bright?" The effect of intensity on tint is seen in such distinctions as soft, mild; and of combined pitch and intensity, in the distinctions, shrill, piercing, &c. In addition to pitch and intensity the writer brings in extensity or volume, which as we have seen characterises according to him the lower tones. The effect of this on tint is, he tells us, illustrated in the features of breadth and fulness, and on the other hand of fineness and sharpness, which we attribute to the tones of low-pitched and of high-pitched instruments respectively. This whole analysis of clang and tone-tint is in the author's best manner. Whether it is quite exhaustive remains to be seen after it has been subjected to the criticisms of experts in the science.

In taking leave of Prof. Stumpf's volume I wish to say that its instructiveness resides to no small extent in a feature to which a review is unable to do justice; I mean in the number and variety of side-suggestions with which the exposition is enriched. Again and again the phenomenon specially dealt with is illustrated by a happy allusion to something analogous in other regions of sense. In this way the discussion becomes much more than a specialist's treatment of one group of psychical facts: it helps to elucidate and to render more precise the more general conditions of sensation and of mental experience as a whole. All serious students of psychology must pray that the author may be able to carry through, with as little delay as possible, the vast and important work he has planned out.

James Sully.

VII—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

From Lyre to Muse. A History of the Aboriginal Union of Music and Poetry. By J. Donovan. London: Kegan Paul, Trench, Trübner, & Co., 1890. Pp. viii., 209.

Mr. Donovan's book springs from the need, felt and admitted by himself, of supporting by historical and technical facts the speculative position taken up in an earlier essay of his (*Music and Action*). Beginning with an analysis of musical impression, he arrives at the conclusion that this was primarily an impression of rhythm. Mere rhythmic beating evokes in our day feelings which, if not easily determinable, are probably rather disagreeable than otherwise. "To lowly evolved minds, on the other hand, the influence of bare rhythm is pleasurable if the mind only remained simple enough to feel it; but the mind did not thus remain." The aid of tones was required to satisfy its developing capacities and "to enable the stimulation of rhythm to hold its own in consciousness in spite of reality," of "the every day reality" with which the feelings excited in us are associated (pp. 16, 17). "Whilst rhythm was stimulating the body . . . tones made the giving way to frantic bodily excitement less needful" (p. 27). Such rhythmic stimulation is in intimate connexion with "the natural pleasure of the play-excitement of the body. And musical delight consists of this pleasure of play-excitement as modified through the course of ages by the attraction of attention to the pitch-relationship of the tones conveying the rhythmic stimulation" (p. 198). "*Pitch-relationship . . . was from the first step in tune-formation the chief formative principle in the grouping of rhythms*" (p. 98). This insistence on the significance of rhythm in the genesis of music has led me to follow the author's exposition with keen interest and hearty acquiescence. Take in particular the following passage:—"An exclamatory impulse in itself gives no account whatever of the origin of the truly melodic form of song. . . . We are only concerned with the fact that vocal exclamation could not possibly attain a melodic character until it drifted into the mould or the form of the rhythmically stimulating tones which were gradually intensifying and purifying the pleasure of bodily play-excitement" (pp. 199-200). Here Mr. Donovan has, in my opinion, lit upon the one true starting-point for a psychological explanation of the origin of music. It is only where he speaks of pitch-relationship as the formative principle by which rhythms are grouped and divided into periods, that I am not disposed to go along with him, fully as I acknowledge in other respects the significance of pitch-relationship. The question is too important to admit of adequate treatment on this occasion, but I hope for an opportunity of returning to it.

Besides giving this derivation of the origin of music, the author discusses the subject of musical expression, where I follow him with no less appreciation. He disputes, and rightly too, the notion of definite connexions existing between music and ordinary feelings and thoughts, but finds, nevertheless, "that the purely tonal work in the course of its variations upon the central fact . . . of the theme . . . must permit the mind to move in the region of ideas now and again" (p. 85), even though it be tonal interests only which extend (not invent) the composition. The "most advanced and pseudo-scientific position," taken up by certain philosophers, "made itself almost ridiculous . . . . because

it regarded music at its best as a thing that had no certain human connexions, since it was clear to them that it had no definite connexions with nameable ideas and emotions" (p. 46). "This deepest pleasure," afforded to the listener by purely tonal music, "is inherently subjective. It is in himself, and from himself, though excited by the art-work. The art-work imposes no objectively determined thing upon him, but lets his own individuality swell beneath the stimulus that it conveys" (p. 87). On this subject of musical impression, I had before come to the same conclusion, to which Mr. Donovan here brings us in a way that is both original and convincing. His statements seem to me, in their clear and sober wording, to offer the simplest solution of the chief difficulty hitherto encountered by the aesthetics of music.

In a further chapter on "The Fusion of Tones and Words," the author pursues the traces of musical impression in poetry (metre and refrain, p. 171), showing how at first the co-efficient word disturbed musical pleasure (p. 146), and how music in its turn broke in everywhere on the strict symmetry of verbal rhythm. He then goes on to indicate how harmony was developed, and suggests that to it is "given the first place in the difficulty of musical theory . . . . because of the seemingly independent character of its pleasures" (p. 174)—an independence more apparent than genuine. For, to take an instance, the interval of the third needs "relationship, before it gives a truly musical pleasure," as much as the single note needs connexion with a melody (p. 174). It is a pity this observation is not more fully developed. In view of all that the author has actually said on the evolution of harmony, on the artistic mission of Northern monks, on church music in the North, &c., I should have looked with confidence for new and fruitful conclusions, had he set himself to give an explanation of harmony.

While not overlooking the supporting facts that may be drawn from ethnology, Mr. Donovan yet seems to me not to make enough of them or not to have ascertained them always with sufficient exactness. To his general remark that "nearly every American and Australian traveller observes that the performances of the savages display no signs whatever of concerted rhythms" (p. 96), I must demur. A comparison of the records of travel has led me to an exactly opposite conclusion. And, indeed, it is all in Mr. Donovan's favour that it should be so; for, if the observation he cites were true as a rule, his theory would be overthrown. "The character," he continues (p. 97), "of the music performed by some African tribes has been adduced as a certain mark of Portuguese and also Mohammedan influence in the distant past in cases where such influence had hardly been suspected." This is true in some cases, but we know it not otherwise than the savages themselves know it, who retain as firm a recollection of the stranger as of the art he taught them; and, putting this aside, the last and the present centuries have seen the discovery and opening-up of regions where previously neither the European nor his influence had penetrated. Again, the example of the dying Indian chief (p. 69), who in his last hour sings the "death-song," furnishes no adequate proof of the "connexion between the natural man and rhythm and tones". On the contrary, that the song should arise in connexion with the *extinction* of feeling only obscures the author's correct view of the inter-dependence of rhythm and "play-*excitement*".

But these are points of mere detail. The author has succeeded in conducting his readers through the most difficult psychological problems in clear and simple language, and in avoiding that mysticism which unfortunately characterises so many musical treatises. It may thus appeal no less to the practical musician than to the psychological student.

RICHARD WALLASCHEK.

Physical Religion. The Gifford Lectures delivered before the University of Glasgow in 1890. By F. Max Müller, K.M., &c. London: Longmans, Green & Co., 1891. Pp. xii., 410.

These fourteen lectures, coming after the introductory course on *Natural Religion* in general (see Mind xiv. 591), complete Prof. Müller's discharge of duty as first Gifford Lecturer at Glasgow; but, having been re-appointed for a second term of two years, he has already delivered, though not yet published, a third course of lectures. His scheme, it will be remembered, was to follow up his general observations on Natural Religion with special treatment of the three forms which he distinguishes as Physical, Anthropological, Psychological. Accordingly, he begins this present second course with a quotation of the closing paragraphs of the first, in which the scheme was laid out. It is, perhaps, worth noting that the reproduction is not quite as exact as it looks. He still would connect his divisions of Physical and of Psychological Religion with the distinction of Father and Holy Ghost in the Christian Trinity; but, for some reason or other, not stated, he now lets drop the relation he before suggested (*Nat. Rel.* p. 576) between anthropological Religion and Christian worship of God the Son. Be this as it may—and for any right appreciation of Prof. Müller's whole theory of Natural Religion we must await his treatment of the remaining two divisions—let it now suffice to mention that the body of the present course of lectures is taken up with a special study of the development of the godship of the Vedic Agni, from out the human experience of physical fire to start with. Were everything granted as to the continuity of the steps of this development, it is still, even with the help of Prof. Müller's reference to his idea of Henotheism, not very clear how in the end Agni can have all those supreme attributes of father, creator, ruler, judge and what not, by the side of the equally evolved Dyaus and others. In fact, there is always at last, with Prof. Müller, an indefiniteness of statement about things philosophical or religious which leaves the reader one knows not exactly where: what he says seems always ready to melt into something quite different. For the rest, the lectures are richly filled out with Vedic and other lore, conveyed (for the most part) with the author's wonted vivacity.

Introduction to the Study of the History of Language. By Herbert A. Strong, M.A., LL.D., Prof. of Latin in Univ. Coll., Liverpool, William S. Logeman, L.H.C. (Utrecht), Head Master of Newton School, Rock Ferry, Cheshire, and Benjamin Ide Wheeler, Prof. of Greek in Cornell Univ., U.S.A. London: Longmans, Green & Co., 1891. Pp. x., 435.

This is a free adaptation of Prof. H. Paul's *Principien der Sprachgeschichte*, which one of the writers (Prof. Strong) translated into English three years ago; and it is issued at a time when the translation is about to come forth again, in second edition. The object of the adaptation is to bring home Paul's principles to the English-speaking philological student by illustrations taken chiefly from English, and at the same time to set forth the principles themselves in less abstruse form. To this end, the writers, after omitting altogether the general philosophic 'Introduction,' follow strictly the order and titles of Paul's chapters, but within each chapter take what liberties they choose with the order and manner of his exposition. It is a novel procedure, which doubtless will have had the author's approval, though this is not stated. The result, in any case, is a book upon which no pains have been spared by the writers, and which will reach and affect many who might find the translated

work too hard for them, while yet it will form an excellent introduction to the study of this. Mr. Stout has been drawing attention in MIND, incidentally, to the merits of Paul's linguistic, and even from the present adaptation of his work it is easy to see how thorough is his grasp of psychological principle. On the appearance of the forthcoming second edition of the translation (which did not come to hand in first edition), it may be possible to say something on the general position which Prof. Paul takes up for the scientific study of speech. Meanwhile the present modified exposition deserves all commendation for its workmanlike quality.

Outlines of Physiological Psychology. A Text-book of Mental Science for Academies and Colleges. By GEORGE TRUMBULL LADD, Professor of Philosophy in Yale University. London: Longmans, Green & Co., 1891. Pp. xii., 505.

Prof. Ladd, whose great philosophical activity has just resulted in another considerable volume, reviewed above in the present No. (p. 271), produces here, in recast form, for the use of students, the substance of his larger *Elements of Physiological Psychology* (1887). The *Elements*, as explained in MIND at the time (xii. 583), fell into three parts of—"Nervous Mechanism," "Correlations of Nervous Mechanism and Mind," "Nature of Mind". Of these, the second has been least altered—or, if it has been modified and condensed in expression, it has also had its scope somewhat extended, so as to include results of more recent research. The matter of the two other parts has been more freely dealt with, mainly in the way of abbreviation. In the result, the account of the Nervous System remains still quite detailed enough for the purposes of learners. For these, again, the great lightening of the old third part is altogether to be approved. Prof. Ladd's view, however, of the Nature of Mind, whether in itself or in relation to Body, if now less developed in a variety of directions, is, in all essential points, the same as it was. In one respect it is more developed; for, possibly because of some discussion that arose in these pages (vol. xiii.) upon the doctrine of his *Elements*, he has now not omitted to bring his conception of the mind's unity into overt relation with Kant's famous criticism. It may suffice to note the fact, since Prof. Ladd delivered himself on the point in the course of that discussion (see MIND xiii. 628). One is more tempted to remark on his main position, which he again states in this form: "The assumption that the mind is a real being which can be acted upon by the brain, and which can act on the body through the brain, is the only one compatible with all the facts of experience". This has to be read with an antecedent observation, that "the human brain is a vast collection of material molecules," connected "in a unique way with certain forms of external physical energy," but also "standing in yet more surprising and unique relations to a being of a different nature from their own—that is, to the mind". Letting pass the odd distinction of "unique" and "more unique," what strikes one most here is the relation which Prof. Ladd would establish between mind as an essentially metaphysical "real being" and brain-molecules which, as "material," are essentially physical. "Mysterious" he himself calls it—and with reason. With still more reason may one declare it neither relevant nor admissible. It is open to anybody, in the metaphysical sphere, to posit relation between a *reale* of mind and the *realia*—call them all alike 'monads' or what not—that appear as material molecules to our (imaginative) sense; but such relation has nothing to do with the phenomenal business of physiological psychology. And, if thus

irrelevant, surely quite inadmissible, for physiological psychology or anything else, is it to posit a *working* relation between a thing ultimately or metaphysically real and that altogether other kind of thing which we call phenomenal. This is a confusion which, remarkably enough, is not absent from Lotze's discussion of the relation of body and mind in the third book of the *Metaphysic*. Running, as it does, through all that is left of general philosophical consideration at the end of Prof. Ladd's abbreviated work, it makes one regret, in the interest of students, that excision has not here been carried still further. But, however one may take exception to this or that in Prof. Ladd's view of the content and range of physiological psychology, it is simple justice to add that from these *Outlines*—as before from the *Elements*—more is to be learnt of the new development of mental science than from any other book yet produced in English.

Essays, Reviews, and Addresses. By James Martineau, LL.D., DD., &c. Selected and revised by the Author. I. Personal and Political. London: Longmans, Green & Co., 1890. Pp. vi., 527.

The venerable author is to be congratulated on the idea of making the collection here begun of his occasional writings over a range of sixty years. Philosophical interest is pretty sure to be greater in the succeeding volumes, but is by no means absent from the "Personal Sketches" of this one. Two essays in particular may be mentioned here—"Joseph Priestley; Life and Works" (1833), and "Auguste Comte; Life and Philosophy" (1858). The first, towards the end, includes so suggestive a reminiscence of "discarded philosophy," that one cannot but regret the author's decision not to reproduce any of his still earlier essays, which now seem to him "too pervasively steeped in the spirit" of it. The other essay comes short now in not bringing out those nobler and stronger features of Comte's character and intellect which, as well as his weaknesses, have become better known in the course of the last thirty years; but the argument against some of the philosopher's main positions retains all its original force and value.

Outlines of Psychology. By Harald Höffding, Professor at the University of Copenhagen. Translated by Mary E. Lowndes. London: Macmillan & Co., 1891. Pp. xi., 365.

The German edition of this work of the well known Danish professor having been critically noticed (by Mr. Sully) in Mind xii. 606, it is not necessary to do more than give the warm welcome that is due for this English translation of it. Miss Lowndes has brought trained intelligence to her task, and has spared no pains to give a rendering of her author which should be not only faithful but also, in point of English diction, effective. To this latter result she has been helped by the clear and generally vivid exposition of the original, which not even the German text (from which the present translation is made) could mask; while, in point of faithfulness, she has had the advantage of control from the author himself. It is one of the great merits of the book, for English students, that it was originally written with diligent heed on the author's part to all the best work of English psychologists. The interest he has taken in the production of an English edition of his book is thus far more than nominal. He has supplied corrections and notes where later consideration or more recent research made such needful. Nor, in this respect of bringing the book up to the present level of psychological science, should Miss Lowndes's own efforts in the way of supplementary

annotation pass unacknowledged. In the handy (and cheap) form given to the translation, it cannot fail to find its way into educational use, and the native English book that shall outstrip it will need to have uncommon quality both of plan and execution.

The Prevailing Types of Philosophy. Can they logically reach Reality? By James McCosh, LL.D., Litt.D., Ex-President of Princeton College. London: Macmillan & Co., 1891. Pp. vii., 66.

Presents the "negative" side of the author's philosophy; the "positive and constructive side" having been presented in *First and Fundamental Truths* (see Mind xiv. 315, xv. 100). The note contributed to Mind No. 61, p. 159, appears here as Note D of the Appendix. There are three other notes, having reference to Aristotle, Aquinas, and recent criticisms of Kant. The author divides the prevailing types of philosophy into the "Experiential and Sensational," the "*A priori* or Kantian," and "the Scottish School". Criticisms of the former two bear on their rejection of the mind's immediate knowledge of reality. This immediate knowledge Dr. M'Cosh finds to be not sufficiently recognised even by the Scottish school; neither Reid nor Stewart having quite satisfactorily expressed the true doctrine, "which is, that we perceive things, the very things, by sense-perception". An earlier phase of experiential philosophy was reduced to absurdity by Hume's Scepticism. The later phase has undergone the same fate at the hands of Mr. Herbert Spencer, "the Avenger," who "has shown conclusively that sensationalism shuts us up into the bottomless pit of Agnosticism". It may be noted that Dr. M'Cosh points out that Locke, though an experientialist, was not a "sensationalist" (p. 11), and that, in his view, Kant's *Kritik* "is, after all, a more consistent structure than that of any of his followers" (p. 33).

The Scope and Method of Political Economy. By John Neville Keynes, M.A., &c. London: Macmillan & Co., 1891. Pp. vii., 359.

This volume is the most comprehensive discussion of the nature, limits and method of Political Economy that has yet appeared. Besides the topics treated of in Cairnes's well-known work, it contains interesting and important chapters on the relation of the science to morals, to sociology and to economic history, and on the mathematical methods employed in it for proof or illustration. Critical Notice will follow.

The Influence of Greek Ideas and Usages upon the Christian Church. By the late Edwin Hatch, D.D., Reader in Ecclesiastical History in the University of Oxford. Edited by A. M. Fairbairn, D.D., Principal of Mansfield College, Oxford. ("The Hibbert Lectures," 1888.) London: Williams & Norgate, 1890. Pp. xxiii., 359.

These lectures, of which only two-thirds had been seen through or got ready for the press when the lamented author was struck down, deal in a singularly bright and open-minded way with the old story of the transformation wrought upon the central religious ideas of Christianity in its first four centuries of contact with the highly developed civilisation of the Graeco-Roman world. The special topics dealt with in order—Greek Education; Greek and Christian Exegesis; Greek and Christian Rhetoric; Christianity and Greek Philosophy; Greek and Christian Ethics; Greek and Christian Theology (Creator, Moral Governor, Supreme Being); Influence of the Mysteries upon Christian Usages; Incorporation of Christian Ideas, as modified by Greek, into a Body of Doctrine—cover a range of ground which has hardly before been worked

over by an English scholar. Particularly graphic are the sketches given of the methods and matter of liberal instruction, as also of the modes of spiritual activity, obtaining in the organised Pagan society that gradually assimilated the Christian precepts. Altogether, the lectures, in addition to their other significance, form an interesting contribution to the history of philosophy, and, but for the author's untimely fate, the contribution might later have developed into one of real importance.

The Prison. A Dialogue. By H. B. Brewster. London: Williams & Norgate, 1891. Pp. vii., 141.

This may be regarded as a sequel to the author's former book, *The Theories of Anarchy and of Law* (see Mind xii. 467), though the connexion between the two is not pointed out. The speakers this time are: "Clive, a supernaturalist; Beryl, a neo-Christian maiden; Croy, a positivist; Gerald, a wise man". Extracts are read by "Clive" from the diary of an imaginary "prisoner," and commented on by all the persons. Clive and the prisoner probably express the author's views. "The Prison" is ordinary "reality," with its distinction of subject and object. The "supernatural" for which Clive contends is a transcendent sphere of existence in which this distinction disappears. Knowledge of it and identity with it are reached by ecstasy. When this state is attained phenomenal personality has been dissolved, and instead of it there is consciousness of the eternal essence of the personality, which is the same in all. "Participation in eternity" is "the absolute reward of life and the heritage of all men irrespective of creed or conduct". That is, there is no rule for attaining ecstasy. Religion must be dissociated from ethics. The moral life is not the only way—though it is one way—to the "supernatural". The life of ordinary morality can with perfect safety be left to "positivism". This will supply both rule and impulse. Not mere "legality" by itself, but legality with "natural instinct," can take care of all the interests of life. In this absolute "dualism" of religion and morals, morality will lose nothing. while religion will be set free from all limits. The present dialogue, as may be seen, sets forth a definite theory, which the author's former one did not. It offers the same kind of literary interest in its presentation of the rather evanescent thoughts excited by particular moods.

The Future of Science: Ideas of 1848. By Ernest Renan. Translated from the French. London: Chapman and Hall, 1891. Pp. xxiv. 491.

M. Renan's early work, *L' Avenir de la Science*, which has so soon been translated into English, has all the interest that he claims for it in his preface. Written, during the last two months of 1848 and the first four or five months of 1849, to satisfy the need the author then felt of summing up the "new faith" which with him had "replaced shattered Catholicism," the volume was at the time withheld from publication. Within a short period, new interests had been aroused in him by a journey to Italy. The artistic side of life had revealed itself, and the book now seemed "harsh, dogmatic, sectarian and hard". Several friends were consulted, and they agreed that the style would not be to the taste of French readers. The ideas here presented in a mass ought rather to be worked off by piecemeal publication. M. Renan took this advice, and in the meantime left the old MS. at the bottom of a drawer, thinking that it might give pleasure to a select class of readers if published after his death. At length he made up his mind to publish it himself. "I flattered myself," M. Renan continues, "that perhaps some

people would read these ancient, honest pages not without profit to themselves, and that the rising generation especially, which seems to be somewhat uncertain about its road, would be pleased to find out how a young man, very frank and very sincere, thought forty years ago, face to face with himself only." Besides, in his later writings he was really forced to make sacrifices. The process of condensing and pruning ideas does not go on without the loss of something in the ideas themselves. Perhaps some readers will like these pages for their attempt to express the whole, and not to lose any part of it in the expression. And, however M. Renan may have modified his style, he has not changed his "fundamental ideas". His "religion is now as ever the progress of reason, in other words, the progress of science". M. Renan's youthful anticipations as to the future of science have reference first to the particular line of development that science itself might be expected to take, and then to the influence of the scientific spirit on thought and life. In the scientific history of the nineteenth century, "philology," in the very general sense here given to the term by M. Renan, has played fully as great a part as he anticipated. For by "philology" he means "the science of the productions of the human intellect" studied according to the methods of experimental science and with the widest erudition for its material. He is never tired of insisting on the "historical method" as that which is to be pre-eminently the method of the nineteenth century. Study of the social life of peoples as expressed in their languages and religions, need of going beyond purely individual psychology, view of literature in relation to its period and country, study of all kinds of "origins," are ideas of which he already sees all the importance. M. Renan may also claim to have recognised how much advance was to be expected in the biological sciences, and to have perceived that the fundamental problems of biology were precisely those that would next have to be attacked. The far-reaching intellectual influence of science also has not come short of his anticipations. On the other hand, as he himself points out, the social problems that seemed about to be solved, still remain open; and he confesses that as to their final solution he is more uncertain than he was in 1848. The self-conscious direction of its course by humanity is no doubt the aim; but we do not at all know what the definitive type of civilisation is to be, and till we know this we cannot say what is the most important factor in progress. The dominant factor may be, as the author thought in 1848, the influence of science—especially the science of man—made systematic and philosophical; but this cannot be asserted with confidence. The idea which he then accepted, of a new dogmatic unity arrived at by scientific synthesis, he no longer looks forward to. What will strike the reader of M. Renan's social speculations, is that the atmosphere of the century has not very deeply changed. The problems occupying men's minds then and now are essentially similar. For this among other reasons, the publication of the book just now is quite opportune.

On the Modification of Organisms. By David Syme. Melbourne: George Robertson & Co.; London: Kegan Paul, Trench, & Co., 1890. Pp. vii., 164.

A hostile criticism of Natural Selection as a theory of the modification of organisms. The real key to organic modification is the organism's power of adapting itself to its conditions. This positive cause being present, modification can be shown in many cases to take place in the absence of any form of selection. The struggle for existence, when present, is not beneficent, but tends on the whole to produce degenera-

tion. Organic changes proceed from the cell, which is the biological unit. As the organism consists of vital units, so the soul consists of psychical units. The synthesis of these is the Ego. "Organisation is rather the result than the cause of mental activity."

Hindu Literature; or the Ancient Books of India. By ELIZABETH A. REED, Member of the Philosophical Society of Great Britain. Chicago: S. C. Griggs & Co., 1891. Pp. xviii. 410.

A well-arranged and interestingly written account of Hindu literature from the Vedas to the Puranas. The mythological element, both in the earlier and later sacred books, is dealt with most copiously; but their philosophy is not neglected, and the principal changes in worship and creed from the first period of Aryan settlement to the full development of Hinduism are noted incidentally. Common to the whole development is pantheism, which is traceable even in the Rig-veda, and gathers force all the way down the stream of Hindu literature. In the code of Manu and in the Upanishads appears the doctrine of metempsychosis, henceforth characteristic of Indian religion. Both elements of the creed are abundantly illustrated in the two great epics, the Ramayana and the Maha-bharata—of which the author gives a very full description. Chapter xxi., on the Bhagavad-gita, has special interest. By two or three well-chosen extracts the distinctive features of Hindu philosophy are made plain. The Puranas are treated with special reference to Krishna-worship, which is also the subject of the penultimate chapter (xxiii.). The combination of pantheistic philosophy with polytheistic mythology is thus indicated: "The pantheism of the Puranas is one of their invariable characteristics, but the particular divinity who is at once the source, the substance, and the absorber of all things, varies according to the individual choice of the worshipper". The general conclusion is that "Hinduism was brightest and purest at its fountain-head". As the "simple nature-worship" of the Vedas developed into mysticism, and became complicated with ritual, Hindu life gradually degenerated.

Introduction to the Study of Philosophy. By WILLIAM T. HARRIS. Comprising Passages from his Writings selected and arranged with Commentary and Illustration by MARIETTA KIES. New York: D. Appleton & Co., 1889. Pp. xii., 287.

The chapters of this work — the aim and substance of which is described in the title—are as follows:—i. "Methods of Study," ii. "Presuppositions of Experience," iii. "Philosophy of Nature," iv. "Man: A Self-active Individual" (comprising sections on "Sense-perception," "Representation," "Significance of the Power to Use Language," "Reflection," "The Syllogism," "The Third Stage of Thinking: The Absolute Idea, or the Reason," "The Emotions," "The Will"), v. "Immortality of Man". "The compiler and editor of this volume, Miss Kies," writes Mr. Harris, "has my full consent to and approval of her selections and arrangement of such portions of my writings as she finds suitable for her purpose. I shall be very glad if this book proves helpful to her classes or to any persons who may use it."

Manual of Empirical Psychology as an Inductive Science. A Text-book for High Schools and Colleges. By Dr. GUSTAV ADOLF LINDNER, Professor in the University of Prague. Authorised Translation by CHAS. DE GARMO, Ph.D., Professor of Modern Languages in Illinois State Normal University. Boston: D. C. Heath & Co., 1890. Pp. xiii. 274.

This book, which is now in its eighth German edition, is expressly a *text-book* of Psychology, and has all the excellences which are expected in a work of that kind. It is clear and concise in its statement; its divisions are, on the whole, good; and it is withal interesting and memorable. The author's standpoint is that of Herbart. His aim is sufficiently indicated in the following words of the *Preface:* "The motive to the preparation and publication of this volume was a double one. The first was the experience, to me sufficiently clear, that the existing psychological text-books, however valuable they may be, leave much to be desired in regard to comprehensibility and incitation to original thought. . . . The second motive was the conviction that in *empirical* psychology one can and should have regard to those *real* explanations which lie in the *facts* and which can be derived without metaphysical exposition; and, farther, that one has no reason whatever to limit himself to mere verbal explanations—for what else does the old doctrine of the so-called *faculties* offer?"

The Elements of Psychology. By GABRIEL COMPAYRÉ, Professor in the University. Translated by WILLIAM H. PAYNE, Ph.D., LL.D., President of the Peabody Normal School. Boston: Lee & Shepherd, 1890. Pp. vii., 315.

Dr. Payne, who has already translated into English M. Compayré's *Histoire de la Pédagogie* and *Leçons de Pédagogie*, now gives us his *Notions élémentaires de Psychologie*, having specially in view the needs of normal school pupils. The book seems well adapted to its purpose; the author's experience, no doubt, has been his best guide. Dr. Payne commends it to English readers on the score of the "common sense" standpoint which it represents. The summaries at the close of each chapter ought to be helpful to students.

Reason and Authority in Religion. J. MACBRIDE STERRETT, D.D., Professor of Ethics and Apologetics in Seabury Divinity School. New York: Thomas Whittaker, 1891. Pp. 184.

"Current discussions of contemporary religious themes and thinkers" under the influence especially of Hegel, by the author of a recent work, *Studies in Hegel's Philosophy of Religion*, already in its second edition (New York: Appleton). The author's most distinctive point is his use of the idea of a social factor in knowledge to justify religious faith. The ground of certitude in religion is not to be found in particular arguments, as the eighteenth century apologists supposed, but in an "organic social process" such as constitutes the life of a Church. There is a time for reflective criticism, but this must be only with a view to a final "comprehension"; it must be a "process of negating truth by affirming fuller truth," and must not stop at the "abstract negative stage". When it stops at this stage, doubt is no longer "saintly," but "sinful". "It is then putting the absolute emphasis on subjective reason. It is then non-human, non-rational, a violation of the binding relation between God and man through historical and social media. Such absolute negativity of subjectivism is the very essence of the devil." "Philosophy is only the making explicit for thought what is contained in the ordinary Christian consciousness." The spirit of comprehension, having passed through the sceptical stage, will always hold the critical faculty in abeyance, as having been satisfied once for all. It will not reject old formulas, but will justify them historically, though "we can even thus only accept many beliefs and dogmas in a Pickwickian sense".

The Philosophical Works of Leibnitz. Comprising the *Monadology*, *New System of Nature*, *Principles of Nature and of Grace*, *Letters to Clarke*, *Refutation of Spinoza*, and his other important Philosophical Opuscules, together with the Abridgment of the *Theodicy* and extracts from the *New Essays on Human Understanding*. Translated from the original Latin and French, with Notes, by GEORGE MARTIN DUNCAN, Instructor in Mental and Moral Philosophy, Yale University. New Haven : Tuttle, Morehouse and Taylor, 1890. Pp. 392.

The long title-page of this book is here quoted in full as giving a fairly comprehensive notion of the range of Leibnizian writings here brought to the door of the English-speaking student in careful and effective translation. The title-page, however, in its ordering of the works selected for mention, does not show the book at its best or give a just idea of the translator's knowledge of his author. The body of the book contains 36 pieces in all, disposed in a chronological order between the years 1679 and 1716 (except that the extracts from the *New Essays* of 1704 are, for some reason or other, placed last). One or two of the dates assigned are a little questionable, *e.g.*, 'Notes on Spinoza's *Ethics*' referred to c. 1679 rather than 1678; but, in the main, the translator throughout the whole book (including his useful Notes at the end, pp. 363-92) shows intimate acquaintance with the best and latest authorities on his subject. As an instance, may be noted his acceptance of Gerhardt's proof that—not the so-called *Monadology* but—the *Principles* of *Nature and of Grace* was the compend written for the philosophical enlightenment of the doughty Prince Eugene. It would have been better if, both on the title-page and in its place in the book, Foucher de Careil's so-called *Refutation of Spinoza* had been marked as his naming and not Leibniz'; but the point is not overlooked in the translator's Note at the end. Excellent judgment has been shown in the selection of the pieces. Almost the only omission of any importance is the short essay, No. xxvi. in Erdmann's edition, *De vera methodo philosophiae et theologiae*. This little piece, referred by Gerhardt to about 1680, is of special interest as giving Leibniz' first identification of the notions of substance and force—under the influence of Plato, as Prof. Stein gives reason for believing in his new work *Leibniz u. Spinoza* noted below, p. 298.

L'Enseignement au point de vue national. Par ALFRED FOUILLÉE. Paris: Hachette et Cie., 1891. Pp. xviii., 451.

"L'auteur applique à l'éducation les lois de l'évolution et de la selection au sein des sociétés. Selon lui, le but dernier de l'éducation est d'assurer le développement des races et des peuples. Ce qu'il dit au point de vue 'national' n'a rien d' exclusif et peut s'appliquer presque entièrement à l'Angleterre. Les rapports de l'éducation avec l'hérédité et avec la selection des supériorités; la puissance de l'éducation et les limites de cette puissance; la critique des théories de Spencer sur l'instruction; les vraies bases de l'enseignement; la part exacte qu'y doivent avoir soit les sciences, soit les lettres et l'histoire, soit la philosophie; le rôle dominant des études morales et sociales; la nécessité d'orienter vers ces études vraiment éducatrices toutes les parties de l'enseignement; l'examen des humanités graeco-latines; la critique des projets d'enseignement fondé sur les seules langues modernes et des écoles *réelles*; la comparaison de la France, de l'Allemagne, de l'Angleterre et de l'Italie; les réformes á opérer dans tous les pays pour donner

à l'enseignement un caractère vraiment moral et philosophique, en même temps que pour concilier les exigences de la vie moderne avec les études classiques;—tels sont les principaux sujets traités par l'ancien professeur de philosophie à l'Ecole normale supérieure."

Le Sommeil et le Système Nerveux. Physiologie de la Veille et du Sommeil. Par S. Serguéyeff. 2 Tomes. Paris: F. Alcan, 1890. Pp. xxii., 800; xx., 962.

The first of these large volumes on Sleep is wholly physiological; the second is physiological up to p. 635, and from that point onwards chiefly psychological. Based on very extensive study of the work of physiologists, the book is, in its original part, an attempt at a new theory of the cause of sleep. The rhythm of sleep and waking, it is contended, belongs to the vegetative life, and is to be assigned primarily to the sympathetic nervous system. Immediately it depends on modifications in the circulation, effected by the cerebro-spinal system; but that system itself receives the influence determining the modifications from the state of the sympathetic system with respect to "assimilation of imponderables". As nutrition is subserved by solid and liquid matter in digestion, and by gaseous matter in respiration, so there is a special kind of alimentation that is subserved by the ether. The "imponderable" also is "alibile"; the sympathetic system operating upon the "circumambient dynamism"—not without the aid of an appropriate apparatus—in "two alternate phases of reception and rejection". "Assimilation of imponderables," or "dynamical assimilation," when it is in its phase of "reception" (*emprunt*) produces the state of waking, when it is in its phase of "rejection" (*rejet*) the state of sleep.

De l'Idéal. Etude Philosophique. Par A. Ricardou, Agrégé de Philosophie, Professeur au Lycée Charlemagne, Docteur ès lettres. Paris: F. Alcan, 1890. Pp. 356.

"The ideal" is defined as that degree of perfection which is immediately superior to reality. Like "fiction," it corresponds to nothing that actually exists, but, unlike fiction, it is "realisable". It is not a mere "general idea," but an idea that is embodied in a "concrete and particular type". To have a higher degree of perfection is to be "better"; and the "better" is in the end that which is morally better. Higher degrees of perfection are progressively realised in science, art, morality and religion; both taken separately and as terms of a series. Science attains truth by setting up ideal explanations in advance of those already reached and then applying them to experience. Art adds to "imitation of nature" something from our internal being, and, by expressing this in the form of beauty, gets nearer than science to the central spring of life, which has its proper expression in morality. The religious ideal is "the supereminent form of the moral ideal". Such being the nature of the ideal and the part it plays, we have next to ask how it is formed. Is its formation due to conjunctions of elements without any "finality," or is the ideal itself the ground of the process by which it appears to be evolved? The answer is that while the ideal as the determinate thought of a particular "better" is an effect, it is a cause "virtually," or as the indefinite thought of the better. The "mechanism" of the process is therefore not incompatible with its "finality". Lastly, the question presents itself, whether the ideal has an absolute value. It has an absolute "subjective value" because our superior or moral nature, which is its basis, is our real nature. This

absolute subjective value, when its metaphysical conditions are considered, is seen to involve the absolute "objective value" of the ideal. Our own nature, essentially moral, is identical with the true nature of being; this therefore is essentially moral. Spiritualism, then, is the true metaphysical hypothesis; and it is shown to be so not by a purely "moral" argument, but on the "speculative" ground that it is the only hypothesis which explains our whole nature, the moral part of it included.

Eléments de Philosophie. Par GEORGE L. FONSEGRIVE, Professeur agrégé de Philosophie au Lycée Buffon, Lauréat de l'Institut. I. *Psychologie.* Paris: Alcide Picard et Kaan, 1890. Pp. 310.

In this first part of a course on the "Elements of Philosophy," the author of the *Essai sur le Libre Arbitre*, noticed in MIND xii. 621 and xiii. 112, makes an attempt to introduce "the new psychology," as represented by MM. Taine and Ribot and by the English psychologists, into secondary instruction, while remaining "faithful to the doctrinal traditions dear to the University". His exposition has the character of the best modern psychological writing; being scientific in matter and not unliterary in form. Adherence to the "doctrinal traditions" referred to shows itself chiefly in the absolute separation of "higher" from "lower" processes of consciousness. The lower plane of consciousness is that of "Affective psychology". It comprises Sensation, Conservation of Images, Association, Representative and Motor Effects of Images, Appetites and Affective Inclinations, Instinct, Habit. These data cannot enter into any higher mental process without the transforming activity of Reason, which is not included in them. "Affective psychology" is common to man and animals. "Reflexive psychology," which deals with the higher plane of consciousness, is special to man. This division indicates nothing less than a difference of nature. In treating of "Reflexive psychology," the author begins with the "reflexive states of attention". "Attention," in his view, "is the act by which the Ego raises an affective state to the reflexive state." He next goes on to Abstraction, Generalisation, Judgment, and Reasoning. The "essential concepts of the understanding" (Space, Time, Number, Substance, Cause), and "first principles" (the principles of Identity and of "Reason" with their derivatives), are dealt with from the psychological point of view. Memory in its form of active "recollection" is discussed. Imagination, in its similar active (as distinguished from passive) form, is considered further on. Next after memory come the various kinds of Perception (perception of the body, internal and external perception, natural and acquired perceptions), then "the supreme ideas of Reason" (the infinite, the absolute, the perfect, God) and the forms assumed by reason ("geometrical spirit," &c.). Hallucinations and dreams are compared and contrasted with normal perceptions. After the chapter on Imagination come discussions of the Beautiful, of Art, and of Language as at once the instrument and the necessary condition of Thought. The Will, with related topics such as the "Reflexive Inclinations," the Passions, Character, and Personality, is next dealt with. Two chapters are here devoted to determinism and free-will. Lastly, the differences between man and animals and the relation of mind and body are discussed. Each chapter or "lesson" is followed by a very good "summary" and by a list of books to consult. There will of course be differences of opinion as to many of M. Fonsegrive's positions, but everyone will recognise that his manner of treatment is such as to awaken thought in the pupil and not to encourage acquiescence in a dogmatic system.

Leitfaden der Physiologischen Psychologie in 14 Vorlesungen. Von Dr. Th. Ziehen, Docent in Jena. Mit 21 Abbildungen im Text. Jena: Gustav Fischer, 1891. Pp. v., 176.

This is a very good guide to the range of investigations included in "physiological psychology". The principal results already attained are always clearly indicated and are usually given in some detail. The author's own positions also are well defended. Most of the book is strictly "psycho-physiological," though there is one lecture (xii.) devoted to the pathology of mind. Dr. Ziehen begins with a general statement of the parallelism of physiological and psychological phenomena. This he would narrowly limit. "Psychological" for him is the same as "conscious"; and consciousness is the accompaniment merely of *some* processes in the cerebral cortex (and nowhere else). Physiological psychology deals with those mental processes of which the material correlates can be assigned with reasonable probability. Thus reflex and "automatic" acts must be excluded from psychology, though it is necessary to discuss them by way of introduction. On the other side, the general fact of the spatial and temporal ordering of sensations and ideas can meet with no explanation in physiological psychology. It has to be simply assumed. The general assumption being made, the physiological psychologist can explain to a certain extent how particular sensations come to be arranged in a particular order; but this is all that he can do. Again, the psycho-physiological parallelism is no philosophical explanation. The series of changes in the nervous system is without break, and from the physiological point of view consciousness is simply an accompaniment of some of its links; but subjective psychology shows that the psychical and not the physical series is originally given, and thus opens an ultimate philosophical question. This philosophical question, physiological psychology, if it is to be constituted as a natural science, must on principle not attempt to solve. In taking up his own scientific position, the author attaches himself decidedly to English Association-psychology, rejecting Wundt's doctrine of "apperception" as in all cases a superfluous hypothesis. The elementary physiological process he defines as a movement following on an external stimulus. When there is no parallel mental process, the act is "reflex" or "automatic"; reflex if it is unmodifiable by "intercurrent stimuli," automatic if the nature of the reaction is determined by these as well as by the initial stimulus. When there is a parallel mental process, there is a true "action". The difference of an "action" from an automatic act is that, while the automatic act is modified only by intercurrent external stimuli, the action is modified also by "intercurrent memory-images". Thus the fundamental psychical process consists of three stages: (1) sensation or perception, (2) play of "motives" or memory-images, (3) action. Owing to conflict of tendencies the process may not end in external movement; the sensation also may recede into the background, leaving only the play of images. The movement itself, according to the view accepted by the author, is unconscious or merely material; "sensations of movement" tell us when an action has taken place, but not when it is going on. A very ful account is given of the sensations; relation of sensation to stimulus especially is dealt with at length. Dr. Ziehen proposes a "physiological" interpretation of Fechner's law. It is to be regarded as expressive of the relation between external stimulus and process in the central nervous system. As this relation probably varies in a complex way, deviations from the formula, as well as its approximate accuracy for ordinary cases, are easily explained. Sensation

and memory-image are regarded as having their seat in different portions of the cerebral cortex. It is true that the question is not decided; but an assumption has to be made for the sake of fixing our ideas, and this seems most in accordance with present physiological and pathological knowledge. The "latent disposition" which the sensation leaves as its residue is purely material; it acquires a mental accompaniment only when excited to activity by a new sensation or by the play of associations. As the sensation has its "quality," "intensity," and "emotional tone," so the memory-image has its "content," "liveliness" (or "distinctness"), and "emotional tone". Some account is given of the formation of concepts from images; stress being laid on the agency of language. "Contiguity" is for the author the chief law of association; but he recognises "similarity" as an independent law. When different associations tend to revive different latent images, the contest, he finds, is decided by relative strength of association, liveliness and emotional tone of latent representations, and by a factor, which may be called "constellation," consisting in the state of the nervous tracks as regards "hindrance" to association along various lines. The logical function of judging needs no "apperception" to explain it, but admits of at least possible explanation as a higher development of ordinary association. "Attention" is the result of a competition among stimuli, just as revival of a latent image may result from competing associations. It depends, so far as the sensation itself is concerned, on the factors of intensity, "associative relationship," and strength of emotional tone; further, on the accidental "constellation" of representations at the time. "Voluntary thought" can be explained as the result of various factors reducible chiefly to feelings of "tension" (such as give the sense of activity in "attention") and to association with the "Ego-representation" (itself a product of past associations) The act of will may be similarly analysed. What is characteristic of it is that the idea of movement precedes actual movement. Psychologically it is, like thought, a train of associations.

Geschichte der Philosophie. Von Dr. W. Windelband, Professor an der Universität Strassburg. Zweite Lieferung. Freiburg i. B.: J. C. B. Mohr (Paul Siebeck), 1891. Pp. 129—256.

This second part of a compendious history of "philosophical questions" rather than of "philosophers" (see Mind xv. 430) has been unavoidably delayed, and the concluding third part has still to appear. The present part includes completion of the "Hellenistic-Roman Philosophy" begun in the first, and breaks off in the middle of the "Mediaeval"; the earliest Christian philosophy being referred to the "Religious," that followed upon the "Ethical," period of the Graeco-Roman. The treatment continues to be marked by great freshness of interest, but the time of real trial for Prof. Windelband's method lies still ahead. We wait with no little curiosity to see how within the limited space left him he will succeed in compassing all the manifold philosophic thought of the last six or seven hundred years.

Die Hypnose u. die damit verwandten normalen Zustände. Von Alfred Lehmann, Dr. Phil, Docent der Experimentellen Psychologie a. d. Universität Kopenhagen. Leipzig: O. R. Reisland, 1890. Pp. viii., 194.

This small volume reproduces a course of lectures given at the University of Copenhagen in the autumn of 1889 by one of the rising lights of the active Danish school—meaning by 'school' a band of

eager workers at the same seat of learning. Höffding and Kromann have their differences, nor does Lehmann, with newer German training, hold exactly by either ; but they constitute together a powerful psychological force at the present time. Lehmann has already done good special work in German journals (*Phil. Studien*, &c.), and has besides recently (1890) produced a considerable treatise on the psychology of Feeling, which, however, as written in Danish, still lies sealed to the outer world. Fortunately, he has himself put these lectures into German. They give, within short compass, a singularly lucid statement of the hypnotic facts that have chained scientific attention in the last decade, and—what is more—an attempt at consistent and thoroughgoing interpretation of them from the psychophysical point of view. The author is not more concerned to explain the hypnotic phenomena by relation to the normal facts of mental life, than to make the abnormal facts do service to the general cause of psychological science. In his psychophysical theory, the most distinctive feature is his connecting of Attention, first and fundamentally, with the variations of blood-pressure in the brain and nerve-system. The idea has often been mooted before, —for example, by Carpenter and others in this country—but it has never been worked out with the same seriousness and intelligence as by Dr. Lehmann. On ground both of its general psychological importance and of its special helpfulness in regard to Hypnotism, return will presently be made to the essay with Critical Notice.

Shakespeare vom Standpunkt der vergleichenden Litteraturgeschichte. Von Dr. W. Wetz, Privatdocent an der Universität Strassburg i. E. Erster Band: Die Menschen in Shakespeares Dramen. Worms: P. Reiss, 1890. Pp. xx., 579.

The author's final aim being to assign the laws of tragedy as manifested in the Shakespearean drama, he sets out, in this, his first volume, with a detailed psychological study of Shakespeare's characters. In an Introduction (pp. 3-43) he explains at some length the conceptions of comparative literary history, and of the relation of literature to national characteristics as otherwise manifested, which, as he tells us, has been formed by him under the influence of M. Taine. Though not directly influenced by any other writer so far as his general conception is concerned, he finds a certain community between the spirit of the present volume and that of M. Arréat's essay, *La Morale dans le Drame, l'Épopée et le Roman* (see Mind ix. 610). Moralists and psychologists, he agrees with M. Arréat in thinking, might find more material for their own purposes than they have hitherto done in the creations of literary art. The chapters of the work are :—i. "Psychology of the youthful Dramas, (*Titus Andronicus*, the three parts of *Henry VI.*, &c.), ii. "Psychological Remarks in relation to the later Works," iii. "Moral Consciousness, Relation of Passion and Reason, Freedom of the Will," iv. "The Conflict," v. "Sense of Justice and Conscience," vi. "Moral Views in the later Histories" (*Richard II.*, *King John*, &c.), vii. "Blindness through Passion—*Othello*," viii. "The immoral Humourists" (Iago, Richard III., Falstaff), ix. "Love and Women". There is an Appendix (pp. 485-560) discussing various points in greater detail. All the chapters form interesting developments of the one main position that Shakespeare represents his characters as determined to action by passions and affections, noble or otherwise, but never by "pure reason". In this point, the precise opposite of Shakespeare is Corneille. Corneille represents his characters as consciously weighing abstract considerations and determining themselves to act in accordance with a reasoned decision.

His view of human nature is that of Descartes. Shakespeare's, on the other hand, is that of Hume, Comte, and Schopenhauer. He represents reason as having no determining power apart from emotion. With Shakespeare's characters, abstract considerations, when they are put forth as grounds of action, are pretexts rather than real motives. Such considerations, for example, do not fail to present themselves to those who meditate a wrong; but they never prevent the wrong from being done, if it is in accordance with the inner springs of the individual character. Character is represented as unalterable, and inherited nature as stronger than education or social surroundings. Free-will is in no way recognised; every action has its natural cause. As for our making a choice not in accordance with natural determining causes, "we have power in ourselves to do it, but it is a power that we have no power to do" (*Coriolanus*, Act ii. Sc. 3). Shakespeare's men have a strong sense of justice—a profound feeling that there is a moral order—but his good characters do not act well from an intellectual conviction as to what is their duty, in opposition to inclination, but because their natural inclinations are towards good. His good women are not "moral in the strict Kantian sense," but only "innocent". Neglect to observe this, the author thinks, is at the bottom of much misapprehension of the Shakespearean drama in Germany. Schiller's plays, and his æsthetic theory, and Kant's doctrine of tragedy, are really in relation with Corneille, not with Shakespeare. German criticism, connecting itself with Kant and Schiller, has held that internal conflict is of the essence of tragedy, and has sought to apply this view universally. In Shakespeare, however, this kind of conflict has not the central significance assigned to it. It does not always exist; and when it exists it is latent and emotional, not conscious and intellectual. The casuistry that balances motives and rival duties (*das sich in Konflikte Hineingrübeln*), which has such a prominent place in the French classical drama, particularly in Corneille, is absent from Shakespeare. At any rate, when it appears to be present, we are made to see that it is (as has been said) either mere pretext urged to impress others, or that it is nothing but reflective reason, powerless to create or to resist a single impulse, or reason playing the part of advocate for passion.

Zur Natur der Bewegungen. Von Dr. Phil. Susanna Rubinstein. Leipzig: A. Edelmann, 1890. Pp. 64.

A study of "movements," ranging from the physiology and psychology of the senses, reflex action and instinct, to the expression of the emotions and the physical and mental marks of temperament. The information is derived from varied sources, and the author's psychological talent is displayed in not infrequent original observations.

Metaphysik. Eine wissenschaftliche Begründung der Ontologie des positiven Christentums. Von Theodor Weber. Zweiter Band: Die antithetischen Weltfaktoren und die spekulative Theologie. Gotha: F. A. Perthes, 1891. Pp. viii., 587.

Completion of a work the first part of which was noted in Mind xiv. 302. The author's object is to put the "ontology of positive Christianity" in such a position that it will be sheltered from the attacks of the "anti-Christian science of the present and perhaps still more of the future". In his view, "only *three* essentially or qualitatively different creatures are possible, antithetic spirit, antithetic nature, and synthetic man, which together constitute the visible and invisible universe". By

means of this doctrine, all pantheism can be surmounted, and theism established on a scientific basis.

Leibniz und Spinoza. Ein Beitrag zur Entwicklungsgeschichte der Leibnizischen Philosophie. Von Prof. Dr. Ludwig Stein. Mit neunzehn Ineditis aus dem Nachlass von Leibniz. Berlin: Georg Reimer, 1890. Pp. xvi., 362.

This is a monograph of firstrate importance for the history of philosophy, both in the more special reference of its main title, and in the wider reference of its sub-title—as concerned with the development of Leibniz' thought in general. It was hoped that some detailed account of it might have been given in the present No., but this is at the last unavoidably held over till the next. Meanwhile, the book is commended without reserve to all who are interested in Leibniz or in Spinoza, to whom the younger thinker is now proved to have stood in much closer and more significant relation than was previously known or suspected. The positions which Prof. Stein now supports with admirable skill and thoroughness were first indicated by him in a short memoir presented to the Berlin Academy of Sciences in 1888.

Received also :—

Proc. of the Aristotelian Society, i., 4 (1), Lond., Williams & Norgate, pp. 39.
J. Cappie, *The Intra-Cranial Circulation*, Edinb., J. Thin, pp. 188.
A. C. Fraser, *Selections from Berkeley*, 4th ed., Oxf., Clar. Pr., pp. liii., 402.
F. Jordan, *Birth, Parentage and Character in History*, Lond., Kegan Paul & Co., pp. 82.
D. Lioy, *The Philosophy of Right* (tr.), 2 vols., Lond., Kegan Paul & Co., pp. xli., 353; viii., 392.
Kant, *Principles of Politics* (tr.), Edinb., T. & T. Clark, pp. xliv., 148.
C. Chapman, *Pre-organic Evolution*, Edinb., T. & T. Clark, pp. x., 304.
A. Schopenhauer, *The Art of Literature* (tr.), Lond., Swan Sonnenschein, pp. xiv., 149.
W. D. Morrison, *Crime and its Causes*, Lond., S. Sonnenschein, pp. x., 236.
A. Winter, *The Elmira Reformatory*, Lond., S. Sonnenschein, pp. x., 172.
W. T. Harris, *Hegel's Logic*, Chicago, S. C. Griggs & Co., pp. xxx., 403.
M. M. Curtis, *Locke's Ethical Philosophy*, Leipzig, G. Fock, pp. 145.
E. de Laveleye, *De la Propriété*, 4me ed., Paris, F. Alcan, pp. xxx., 562.
J. Maus, *De la Justice pénale*, Paris, F. Alcan, pp. 228.
Kant, *Premiers Principes Métaphysiques de la Science de la Nature* (tr.), Paris, F. Alcan, pp. cxxx., 96.
A. Coste, *La Richesse et le Bonheur*, Paris, F. Alcan, pp. 188.
P. Sollier, *La Psychologie de l'Idiot*, Paris, F. Alcan, pp. 276.
F. Rauh, *Fondement métaphysique de la Morale*; Paris, F. Alcan, pp. 259.
A. E. Chaignet, *Histoire de la Psychologie des Grecs*, ii., iii., Paris, Hachette et Cie., pp. 528; 486.
B. Carneri, *Der moderne Mensch*, Bonn, E. Strauss, pp. xv., 186.
E. v. Schmidt, *Euklid's 11 Axiom durch eine neue Definition der geraden Linie bewiesen*, Moskau, Deubner, pp. 24.
A. Schopenhauer, *Werke* (in Auswahl), 2 Bde., Leipzig, G. Fock, pp. xxxiii., 740; 781.
H. Natge, *Ueber F. Bacon's Formenlehre*, Leip., Teubner, pp. 82.

Notice will follow.

VIII.—FOREIGN PERIODICALS.

Revue Philosophique.—Au xvi. No. 1. J. Soury—La psychologie physiologique des protozoaires. [There is no need to suppose the presence of consciousness in Protozoa. All their adaptations are explicable by "the mechanical effects of vital competition and natural selection". The only scientific account of the action of natural forces on unicellular organisms is a classification of the reactions of the organisms on different kinds of stimuli. The reactions of Protozoa, defined according to the force responded to, are: Heliotropism, Thermotropism, Stereotropism, Chimiotropism, Galvanotropism, Geotropism. "Cellular irritability," without conscious process, sufficiently explains the response of the organism in every case.] B. Perez—Le caractère et les mouvements. [A classification of types of character according to forms of "motor reaction"; the forms selected being "la *vitesse*, la *lenteur*, l'*énergie*". Characters accordingly are divided into: *vifs*, *lents*, *ardents*; *vifs-ardents*, *lents-ardents*; *pondérés* ou *équilibrés*. A good psychological description is given of each type.] G. Mouret—Force et masse. [An attempt at revision of the conceptions of force and mass as commonly employed by physicists.] Analyses, &c. (C. Mercier, *Sanity and Insanity*, &c.) Rev. des Périod. Correspondance (J. Delboeuf—La personnalité chez l'enfant). Société de Psychologie Physiologique (Dr. Dufay—Les somnambules criminels). No. 2. Paul Janet—Réalisme et idéalisme. [Idealism in its highest forms, and a spiritualistic and *a priori* realism, are indistinguishable. According to such an idealism or spiritualism, "all is the product of the absolute spirit which, without losing anything of its essence, finds in nature and in mind a double expression of itself and is consequently the bond of the two worlds".] G. Tarde—L'art et la logique (i.). [The aim of art in all societies is at first social and religious. When art and morality begin to distrust one another, it is a sign of "logical discord in the social state". In an age logically at one with itself, art translates the general conviction. Changes in art are determined by changes of social aim from one epoch to another. Pure or aesthetic, as distinguished from industrial, art consists in generalising the love of things that cannot be appropriated. When a truth or utility contains in itself the indefinite promise of future truth or utility, we call it beautiful. Moral and aesthetic beauty are alike "conformist"; but both convey the idea of a different and better type than that which is in possession. In all the modes of artistic "imitation," we have to distinguish two kinds—imitation of surrounding reality, and of traditional types that were at first the result of invention.] J. J. Gourd—Morale et métaphysique. [Metaphysic derives its justification from practical philosophy; but there can be a coherent practical as well as theoretical doctrine without metaphysic, that is, without appeal to anything "ultra-phenomenal". By considering pleasure, not in its elements, which are inaccessible to science, but in its extreme generality, we may arrive at a criterion of preferability among pleasures. We must place ourselves at the quantitative point of view, and have regard to the "amplitude of co-ordination inherent in each category of functions". A volition may then, in agreement with the criterion, impose "practical co-ordination" on future pleasures. "Obligation" has its source in this volition, which fixes what we are to do in the future, instead of leaving it to be decided

by the pleasure of the moment. The "sanction" is "the pleasure immanent in virtue". For this we do not need to go beyond what has already been established. There is, however, an element that escapes the bounds of a moral system such as has been indicated. Outside the "moral good" there is a "free good," not to be brought under the conception of obligation,—a "something, in respect of goodness, which morality does not attain".] Analyses, &c. No. 3. J. Delboeuf—Pourquoi mourous-nous? (i.). [A complementary study to the author's *La Matière brute et la Matière vivante*, having its occasion in the experimental researches of Maupas on the ciliated Infusoria. The question, as put at the end of the present article is: "Why is individual matter mortal and specific matter immortal?" Multiplication by fission does not involve "immortality" of the individual. Weismann supposes that death arises among Metazoa, for the good of the species, simply as a result of selection. In reality, it has an intrinsic cause—the wearing out of a mechanism. And there is no break such as Weismann supposes between Protozoa and Metazoa. The Infusoria observed by Maupas have been found to degenerate from a certain stage if they are allowed to multiply constantly by fission. Degenerescence is avoided by conjugation. The whole process of change from the first cell-division onwards, Prof. Delboeuf would describe as a "disequilibration," preparing the cell for conjugation, and then, if this does not take place, leading to "senescence". Among the movements of Infusoria, conjugation in particular is not to be explained without the supposition of intelligence, or conscious choice. The apparent exception of these unicellular organisms to the conclusion that, in essence, the individual is mortal, the species immortal, is explained on the one side by regarding the whole mass of descendants of a single individual obtained directly by cell-division without conjugation as a sort of "individuality," and on the other side by regarding conjugation as a "reciprocal fecundation".] Pierre Janet—Sur un cas d'aboulie et d'idées fixes (i.). [Discusses in detail an interesting case of "aboulia". With the patient described, the difficulty of performing an action is not due to any want of power to carry out the muscular movements. "Automatic" and habitual acts can as a rule be executed quite easily. So also can "suggested" actions. Except in the case of these last—which differ psychologically from other actions—the difficulty of carrying out a movement is proportional to its novelty. It must be, then, a difficulty in forming the synthesis of images by which the act is represented. Studying "fixed ideas" in the same patient, Prof. Janet finds that these are all repetitions of old ideas. They have no logical bond with the present. "Post-hypnotic suggestions" carried out by the patient are not distinguished by her from these "obsessions". "Aboulia" cannot itself be explained as the result of a "fixed idea," since symptoms of it appear before there are any "fixed ideas". Sometimes the reproduction of an old idea takes place in a sort of "crisis"; the obsession is then complete. Sometimes it takes place in the normal state; the obsession has then to struggle with the normal thought which in part persists.] G. Tarde—L' art et la logique (fin). [The aesthetic arts need continuous novelty, as the industrial arts do not. A work of art must above all things be *interesting*. It is, in the first place, the solution of a problem. It finds its material in the conflicts and combinations of persons and ideas. As it once expressed a general social conviction, so we may expect that it will again. At the origin of artistic development we find, whenever we can see clearly, some book, recited or written. The germ of all the arts is epic or narrative poetry.

Architecture, which by some is placed first, is really inspired by ideas that have already found literary expression of one kind or another. The last stage of artistic development is dramatic poetry. In the drama the artistic problem—some kind of conflict, and its solution—by reconciliation of two opposites or by suppression of one of them, become quite explicit. In art generally, a solution may be presented without explicit statement of the problem; but if we are presented with a problem and no solution, there is no art. Hence may be explained, for example, the artistic character of history as contrasted with events that are passing at any particular moment.] Analyses, &c. (J. Pikler, *The Psychology of the Belief in Objective Existence*, &c.). Rev. des Période.

Rivista Italiana di Filosofia.—An. vi. 1, No. 1. La Direzione agli Associati. C. Cantoni—Sul sentimento fondamentale corporeo. [An argument against the Rosminian doctrine of a "fundamental bodily sentiment" of perceptual character, championed by Prof. Pietrobono in the *Riv. Ital.* v. 2, Nos. 2, 3. Rosmini's "fundamental sentiment" is not to be confounded with the "common sentiment," or coenaesthesis, of other psychologists.] V. Benini—Del valore estetico dei fenomeni. [An essay marked by a clear conception of the distinctive place of Aesthetics. Starting with the simple phenomena of sensation and movement, and proceeding thence to those that are expressions of moral and social facts, the author contends that all have aesthetic value according as they have the power of inciting the imagination to a synthesis that is not simply a reproduction of the objective order but is in accordance with a "subjective type". Imaginative "integration" is always the essential thing.] N. R. d'Alfonso—Fisio-fisicologia: Sonno e sogni. Bibliografia, &c.

Philosophische Monatshefte.—Bd. xxvii., Heft, 1, 2. P. Natorp – Quantität und Qualität in Begriff, Urtheil und gegenständlicher Erkenntniss (i.). [Sets out to prove expressly—what the author had assumed in a previous study (*Phil. Monatshefte*, Bd. xxiii.)—that formal logic cannot exist as a science unless it either rests on the logic of objective knowledge ("transcendental logic") or is simply a section of it treated apart for technical reasons.] E. von Hartmann—Zum Begriff des naiven Realismus. A. Döring—Bemerkungen zu vorstehendem Aufsatz. Recensionen. Litteraturbericht, &c. Heft 3, 4. P. Natorp—Quantität und Qualität, &c. (Schluss). [Puts forth as chief result "the solution of the Eleatic problem: how change can generally 'be'". How can the union of position and negation be thought without contradiction? The answer is, by means of "comprehensive unity, which signifies an identity of that which is at the same time distinct". "One is the same with the other, and yet also not the same."] Th. Lipps—Zweiter ästhetischer Litteraturbericht (i.). [In criticising recent works on Aesthetics, the author brings out especially his view that the decisive aesthetic "moment" is the manifestation of an internal value analogous to our "self-feeling". Objects can only have an internal value for us in so far as we put into them a portion of our self, a content of our internal perception.] Recensionen (A. Seth, *Hegelianism and Personality*, &c.). Litteraturbericht, &c.

Vierteljahrsschrift für wissenschaftliche Philosophie.—Bd. xiv., Heft 4. A. Döring—Was ist die Zeit? [Considers and seeks to explain the psychological difficulty of satisfactorily determining the nature of Time.] J. Petzoldt—Maxima, Minima und Oekonomie (Schluss).

A. Marty—Ueber Sprachreflex, Nativismus und absichtliche Sprachbildung (vii.). [A defence of the author's "empirical" view of the origin of language against what he regards as the "nativism" of Wundt and other writers, whose views are discussed at length.] Anzeigen. Selbstanzeige, &c. Bd. xv. Heft 1. R. Seydel—Der sogenannte naive Realismus. [The imagined "naïve realism" of children and animals does not exist. They have no view at all upon the kind of reality that "corresponds to" sensations. The "naïve consciousness," however, on rising above the stage of mere "practical reaction" upon stimuli—which no one calls "naïve realism"—distinguishes between sensation and thing. Colour and shape are assigned to the external world, as the sensations of the "time-senses"—*i.e.*, all the senses but sight—never are.] S. Hansen—Das Problem der Aussenwelt. [Idealism is, in comparison with the realistic hypothesis of an external world corresponding to our sensations, "highly artificial and unnatural," and therefore at least improbable, Since all the objections to realism rest on "misunderstandings and unclearness," there is no reason for giving up this simplest and most natural explanation of phenomena.] M. Dessoir—Experimentelle Pathopsychologie (i.). [An argument for supplementing "physiological psychology," which in Germany has so far remained the chief application of the experimental method to mental science, by pathological psychology as cultivated in France and to some extent in England.] Anzeige. Selbstanzeige, &c.

Philosophische Studien.—Bd. vi., Heft. 3. W. Wundt—Zur Lehre von den Gemüthsbewegungen. [An elaborate (pp. 335-93) and important contribution to the psychological theory of Emotion and related states of mind. The doctrine propounded does not differ essentially from that set forth in the author's *Phys. Psych.*, but includes many new and interesting developments, positive as well as controversial. The treatment is in three main parts: (1) Terminological; (2) Feeling and Emotion (*Affect*); (3) Emotion, Instinctive Impulse (*Trieb*) and Will. In (1) the development of the psychological vocabulary of Feeling is shown to have been not less belated in German than in other languages. In (2), after critical rejection of the intellectualist and purely physiological theories, Feeling is taken as direct subjective datum (or immediate outcome of subjective reflexion), and Emotion is then marked off from this both in subjective constitution and in respect of its distinctive feature of bodily expression, &c. Thereupon (3) the activity of Emotion leads to the consideration of Instinct generally and of the conscious activity of Will; this final part ending with a criticism of Münsterberg's theory of Volition, and defence of the author's own original position, which the younger investigator has in various ways assailed. The defence is vigorously conducted, but rather slurs over some of the more important issues. The whole essay, however, is a very notable performance.] G. Martius—Ueber die Reactionszeit und Perceptionsdauer der Klänge. A. Kirschmann—Ueber die quantitativen Verhältnisse des simultanen Helligkeits- u. Farbencontrastes.

Archiv für Geschichte der Philosophie.—Bd. iv., Heft 2. E. Zeller—Die Abfassungszeit des platonischen Theätet. [A defence, against E. Rohde, of the view formerly maintained by the author, that the *Theaetetus* was composed about 391 B.C.] P. Seliger—Platons Phaidros. H. Hoffmann—Der Platonische Philebus und die Ideenlehre. [In the *Philebus* there is a falling off from Plato's older doctrine of ideas. This dialogue inaugurates the latest, realistic phase of Plato's thought—

the phase that culminates and closes in the *Laws*.] J. Dräseke—Zwei Bestreiter des Proklos. [On two theological refutations of the Στοιχείωσις θεολογική of Proclus, written, as is contended, by a first and second Bishop Nicholas of Methone, one early in the twelfth, the other in the middle of the thirteenth century.] E. Wolff—Ueber neuere Beiträge zur Geschichte der Poetik. W. Dilthey—Thomas Carlyle. [An attempt to trace the influence of German philosophy on Carlyle's spiritual development.] Jahresbericht (B. Erdmann, F. Tocco, W. Dilthey). Neueste Erscheinungen.

Philosophisches Jahrbuch.—Bd. iv., Heft 1. P.A. Linsmeier—Die Copernicanische Hypothese und die Sinnestäuschungen. [An interesting account of the argumentation of the Jesuit Riccioli, in his *Almagestum novum* (1651), against the Copernican astronomy. The appeal, as the author shows, is constantly to the testimony of the senses; Riccioli argues that if such illusions of sense as the heliocentric theory requires be once admitted, all secure foundation for science is overthrown.] F. X. Pfeifer—Analogien zwischen Naturerkenntniss und Gotteserkenntniss, den Beweisen für Gottes Dasein und naturwissenschaftlicher Beweisführung, mit Bezugnahme auf Kant's Kritik der Gottecbeweise (Schluss). C. Braig—Zu Plato's *Timaeus*, p. 51 E—p. 52 B. [Argues that Plato's primitive matter is "the unity of physical and mathematical space," that is, of the space that appears as real side by side with things, and of the pure extension in which mathematical operations take place.] N. Kaufmann—Das Causalitätsprincip und seine Bedeutung für die Philosophie (i.). [On Aristotle's theory of Cause and the interpretation of it by Aquinas. The philosophy of Aquinas rests on Aristotle's causal principle; and "the great Greek thinker has solved the causal problem for all time".] Recensionen und Referate. Zeitschriftenschau. Miscellen und Nachrichten.

Zeitschrift für Psychologie und Physiologie der Sinnesorgane. —Bd. i., Heft 6. C. Stumpf—Ueber Vergleichung von Tondistanzen. H. Ebbinghaus—Ueber negative Empfindungswerte (Schluss). W. v. Bezold—Urteilstäuschungen nach Beseitigung einseitiger Harthörigkeit. J. v. Kries—Ueber das Erkennen der Schallrichtung (Nachtrag). Versammlungen. Litteraturbericht.

Three new Serials may be noted as launched with or since the beginning of the year:

1. Educational Review, edited by Prof. N. M. Butler, of Columbia College, New York (H. Holt & Co.); ten issues within the year. Pp. 104.

2. Revue mensuelle de l'Ecole d'Anthropologie de Paris, issued by the Professors (F. Alcan). Pp. 32.

3. Schriften der Gesellschaft für psychologische Forschung, edited by Dr. Max Dessoir and Dr. Freiherr v. Schrenck-Notzing (Leipsic, A. Abel); organ of the general German Society, lately formed by union of the "Psychological Society" of Munich, and the "Society for Experimental Psychology" of Berlin. Pp. 90.

IX.—NOTES.

Readers will be interested to learn, from Mr. Romanes's Critical Notice of Prof. Lloyd Morgan's book above (p. 262), exactly how far these two active workers in the fields of animal and higher intelligence agree or disagree. It may, however, not be amiss for a third party to remark that both of them seem inclined to look upon the field of human psychology (up to which or down from which they work) rather too much in the character of virgin soil. One fails, *e.g.*, to see the merit of Prof. Morgan's 'construct' and 'isolate' if these terms are meant to be substituted for—instead of merely to throw light on certain aspects of—the current 'percept' and 'concept'. As to Mr. Romanes (who, by the way, is somewhat appropriative of 'percept'), one may question whether his 'recept' marks quite as much as he seems to think "a hitherto undefined territory of the mental kingdom". Argument, with either of the two, on the points here noted is not now possible; but psychologists, in general, will probably see ground for the reservation in both cases.—Ed.

The Aristotelian Society for the Systematic Study of Philosophy (22 Albemarle Street, W.). Meetings since last record:—Monday, Dec. 15, 1890, Symposium, "Does our Knowledge or Perception of the Ego admit of being analysed?": contributors, Mr. H. W. Blunt, Mr. A. Boutwood, and Mr. G. F. Stout. Jan. 5, 1891, The Rev. T. B. Strong, "*Lux Mundi* and Dr. J. Martineau's *Seat of Authority in Religion* compared". Jan. 19, Mr. F. C. Conybeare, "Professor Clifford's Philosophy". Feb. 2, Mr. S. Alexander, "The Idea of Value". Feb. 16, Mr. G. F. Stout, "The Psychology of Belief". March 2, Symposium, "Has Optimism or Pessimism the deeper roots in Human Nature?": contributors, Mr. F. C. Conybeare, Mr. E. W. Cook, and The Rev. P. N. Waggett. All papers were followed by discussion. [By an oversight, more easily explained than excused, the Note in last Mind (p. 140) on the Society's published *Proceedings* did not mention, among the other papers, one by the President, Mr. Shadworth H. Hodgson, on "Universals in Logic". It is the more to be regretted, because the paper, replete with the knowledge of a philosophical expert, strikes one as specially well-suited to the educative function of the Aristotelian Society.]

With reference to Mr. G. M. Duncan's very serviceable translation of Leibniz' philosophical writings (noted above p. 291), which includes extracts from the *Nouveaux Essais*, it should be of interest to mention that a complete translation of this work may before long be expected, also from America. Mr. Alfred G. Langley, of Newport, R. I., having begun such a translation in the *Jour. of Spec. Phil.* as far back as 1885, is now pushing it on rapidly to completion for publication in book-form.

Prof. A. Campbell Fraser, after a service of nearly thirty-five years (in succession to Sir W. Hamilton), retires from the Edinburgh chair of Logic and Metaphysics on the 15th of May next.

Prof. J. McK. Cattell, of the University of Pennsylvania, has accepted a call to the chair of Experimental Psychology in Columbia College, New York, where (as at the other chief academic seats in America) liberal provision has been made for laboratory work.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—THE PROBLEM OF PSYCHOLOGY.

By E. W. Scripture.

From time to time, in the development of a science, it becomes necessary to investigate its relations to other sciences, and, by determining its limits in various directions, and weeding out the side-issues, to arrive at a definition that accurately states the problem to be solved by it.

The following notes have as purpose the establishment of a clear distinction between Psychology and the other sciences, and thus the attainment of an idea of what the real problem of psychology is.

One after another the sciences have arisen, each taking its own group of phenomena. The objects of experience were not first classified and then distributed in portions to the various sciences, but each has chosen for itself; and, as a result, every object of the universe is treated, not by one, but by many sciences. Each science brings its own purposes, its own methods, to the consideration of every object. It is absolutely impossible to classify the existing sciences as to *what* they treat of, because, to a great extent, they all treat of the same objects. We can separate them only by their various ways of going to work, *i.e.*, according to *how* they treat things.

On this principle, the first division will be into—sciences

that treat phenomena from special standpoints; those that treat them from a general point of view; and those that treat them from both. The Special Sciences occupy special points of view; the General or Philosophical Sciences occupy a general one; and the Didactic Sciences agree with the general sciences when seeking the purposes and ends to be striven for, but with the special sciences when determining the means to reach those ends.

The *Special Sciences* can be classified on various principles. Perhaps the best is the following:—

I. The Mathematical Sciences, treating the *forms* of all experience.

II. The Phenomenal Sciences, treating the *contents* of experience.

The *Phenomenal Sciences* are to be divided into—

(1) The Physical Sciences, which treat experience from its objective side, or as objects independent of the observer;

(2) The Mental Sciences, which treat experience from its subjective side, or as phenomena of the subject.[1]

Into the question of the relation of these two sides or parts of experience we do not need to go; all that is necessary is the fact that the division is recognised by the sciences themselves, *i.e.*, that we actually have a class of physical sciences, and a class of mental sciences.

The group of Mental Sciences is best divided, according to Wundt's scheme, into the sciences of mental processes, the sciences of mental products, and the sciences of mental development. The first class can be called the psychological sciences; the second includes philology, statesmanship, systematic law, systematic theology, &c.; the third includes all varieties of history.

A few words must be said in regard to the position of Philosophy in the classification of the sciences. It has been asserted that philosophy is the general science that includes all others, and that a classification of the other sciences gives the divisions of philosophy. This may or may not be true, but there remains the fact that the science of philosophy itself is left out of the classification. Giving the divisions of a science does not classify it. Suppose we wish to make a classification of treatises on physics. If we divide them into treatises on mechanics, treatises on acoustics, treatises on optics, on heat, on electricity, &c., and then remark that

[1] See Wundt, "Ueber die Eintheilung der Wissenschaften," *Philos. Stud.* v. 1.

these are the divisions of physics, we omit the treatises on physics in general; we have confused a division of the subject with a classification of the treatises on that subject. Likewise, a classification of the sciences must not be confused with a division of philosophy. Even if all other sciences were only parts of philosophy, still there must be one class of sciences for the general science of philosophy.[1] If no place is given to the philosophical sciences, to metaphysics, and the doctrine of knowledge, this can mean only one of two things: either that philosophy as a science does not exist, or that the classification is not correct. If there exists a science of philosophy, it must have some place *in* the classification.

According to our division, the general scheme of the sciences will be in outline as follows:—

A. Special Sciences.
  I. Formal Sciences.
  II. Phenomenal Sciences.
    (1) Physical Sciences.
    (2) Mental Sciences.
      (*a*) Psychological Sciences.
      (*b*) Philological Sciences.
      (*c*) Historical Sciences.
B. Philosophical Sciences.
C. Didactic Sciences.

This characterisation of the chief classes of the sciences is necessarily very brief; but what is especially important for the present purpose can best be extended in considering the relation between Psychology and the Physical Sciences, then Psychology and the other Mental Sciences, then Psychology and Philosophy, and, finally, Psychology and Pedagogy.

I.

The first relation to be considered is that between Psychology and the Physical Sciences. The physical sciences are those that treat of objective phenomena, or the phenomena of nature. Psychology as a science of mental phenomena has a twofold relation to the physical sciences: in the first place, it is complementary to them, a necessary auxiliary;

[1] It seems curious to find no place in Spencer's Classification of the Sciences for such an extensive scientific work as the "Synthetic Philosophy".

secondly, they are complementary to it, accessories in psychological investigation.

It is often the boast of the investigator of nature that he needs no help from psychology, that his science is independent of mental sources of error. It happens, however, that he himself is gifted with a mind, and that he cannot know material phenomena except as connected with mental phenomena. This neglect of the mental part in his investigations is often the source of great failings. The history of the theory of colours shows what an advance was made as soon as the subjective character of colours was recognised. Astronomers once thought that they could record the exact moment of the passage of a star across a line of the telescope; the disagreement of the results of various observers pointed to the fact that there was a subjective element in the registered time. To-day every astronomer who intends to record transits by the graphic method has to determine previously his reaction-time, or, as it is somewhat improperly called, his "personal equation". Moreover, the latest investigations point to hitherto disregarded sources of error in observing and recording. Astronomy is not the only science that is obliged to get psychological data for its own practical purposes. In general, it is to be said that every investigator must from the very outset know something of the science of mental life, merely to keep him from accounting to nature much that belongs to his own self.

There remains one of the physical sciences to which psychology stands in close relation. It is not the place here to speak of the great debt which psychology owes to Physiology, although this is partly the cause of numerous misconceptions in regard to their relation. We have to do with a sharp distinction between them and the unjustified subordination of psychology to physiology.

Perhaps mental phenomena can be present only when certain changes occur in the nervous system, but that is no explanation of them. The function of matter is motion; but is it a sufficient explanation of a phenomenon of mind to give the accompanying physical motion? An idea is not explained if we know that at the time of its occurrence a certain change occurred in a certain part of the brain. Suppose I have a feeling of pain. It may be that before, at the time, or afterwards, some change has occurred in my brain; it may be that such a feeling is always accompanied by a definite nervous change; but is there any intelligible meaning to the statement that the feeling *is* the nervous change? It is the same with all states of mind: under the

closest investigation they always remain states of mind; I can never resolve them into motions of particles of matter. The two sets of phenomena may be inseparably connected and parallel—that is still a problem to be solved—but it is evident that mental phenomena exist as mental phenomena; and, therefore, there can be a science of mental phenomena as distinguished from the science of bodily phenomena. Approaching the question from the other side, we must arrive at the same result. It may be that at some future time an anatomist can so accurately examine the brain with a microscope that he will be able to say with surety, 'This person had such and such sensations, such and such memories,' &c., but he can attach meaning to these statements only by calling up the phenomena to which they correspond in his own mind. A deaf investigator can never imagine what sensations of sound are, even if he could see and record all physical and physiological phenomena that accompany them. He who had such a perfect knowledge of the finest and most complicated movements in the brain that at each moment he could tell the position of every molecule would, in spite of this, not find there pleasure or pain, memories and volitions.[1]

Functions of the brain may correspond to or may hold some other relation to mind; yet mind and brain are not the same; the study of the brain is not the study of the mind; physiology of the nervous centres is not psychology.

Even when the absolute subjection of psychology to physiology is not maintained, yet it is a widely-spread opinion that the only science of mental phenomena which can be of value must be the science of their relations to the accompanying nervous changes. This science, which is in general called physiological psychology, the science of the relations between mental phenomena and nervous phenomena, is a most valuable and practical aid to psychiatry and psychology, but it is not these sciences themselves. The science of the changes of molecules which corresponds to ideas is no more the science of ideas than the science of printed words is philology.

The importance of settling distinctly the relation between these two closely-connected sciences cannot be overrated. On the foundation of a confusion of the two there is rising in many parts of Germany a new philosophy which cannot be designated otherwise than as Materialism. What has the rise of a new philosophy to do with psychology? That's

[1] Cp. Lipps's *Grundtatsachen des Seelenlebens*, p. 5.

just the point: it ought to have nothing to do with it; but, just as idealistic philosophy was in many quarters formerly the basis of psychology, in like manner Revised Materialism is made the basis of many psychological investigations. Against Materialism, Revised Materialism, Idealism, Realism, Transfigured Realism, Positivism, Actualism, &c., &c., *as philosophies*, there is nothing to be said; but as psychologies they are out of place. What is wanted is such a method of investigating mental processes that a dozen investigators, each with a different philosophy, can work side by side and bring out results completely uninfluenced by their theories. Who would ask an investigator of the velocity of light what he thought about the nature of space? The question of the nature of our idea of space belongs to philosophy, not to physics; certain concepts are accepted as the basis of physics, and every investigator uses them, no matter what his philosophy concerning them is. Is there no such possibility for psychology? Must a new psychology arise with every new philosophy?

There is one fundamental axiom on which psychology can work, and without which it becomes involved in the mazes of theory. This axiom can be so formulated: *Mental phenomena cannot influence or be influenced by material phenomena.* This principle was recognised by Giordano Bruno and Spinoza, taken as the starting-point of philosophy by Leibniz, and set up as the foundation of psychology by Wolff. Finally, the discovery, the development and the proof of the law of the conservation of energy by Mayer, Helmholtz, and Joule have rendered the opposite of the axiom inconceivable.

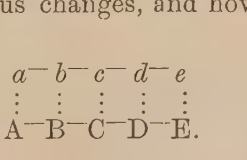
The difference between physiological psychology on a materialistic philosophical basis, and physiological psychology on the basis of physiology and psychology, can easily be made clear. The materialistic theory accepts nominally the law of the conservation of energy for the nervous system. Stimuli act upon the sense-organs and produce molecular changes in the nervous system; these changes progress to the brain, in which they follow more or less complicated paths till sooner or later they pass along the efferent nerves and set muscles or glands in action; nowhere can there be any break in the series of mechanical phenomena. So far this is simply physiology. The theory, however, adds something more: it asserts that certain of these nervous phenomena produce states of consciousness or mental phenomena and others do not. If the nervous phenomena be represented by large letters and mental phe-

nomena by small ones, then the process is supposed to be as follows :—

That is to say, the nervous phenomenon or molecular change, A, produces a change, B, which, according to the not-to-be-broken law above mentioned, must represent exactly the same amount of energy ; this phenomenon, B, passes into other nervous phenomena, C, D, &c., but the sum of energy contained in the nervous system must exactly represent the energy transmitted to it from the rest of the material world, it must return mechanically exactly as much work as is expended on it. According to the theory under discussion, certain of these nervous changes produce mental phenomena ; since each change produces an equivalent nervous change, therefore such a nervous change must produce an equivalent nervous change + a mental phenomenon. That is, the result is greater than the cause.

Psychological problems, when handled from this standpoint, receive a peculiar interpretation. It is entirely a secondary matter what comes into consciousness. For example, a succession of ideas, *a*, *b*, *c*, which appears to us unbroken, would be interpreted somewhat as follows :— first comes idea *a*, then follows idea *b*, then come nervous phenomena, C, D, E, F, G, &c., then idea *c*, &c. In this way we skip back and forth from mental to material phenomena, from mind to nerve ; by doing so we violate our axiom and disregard a fundamental physical law.

The other physiological psychology starts not from a materialistic philosophy but from physiology and psychology. With physiology it accepts and investigates nervous phenomena as an unbroken series, which can never be influenced by any but mechanical forces ; with psychology it investigates mental phenomena for themselves ; then it seeks to determine what relations exist between the two sets. Psychologically, it determines the succession of states of consciousness *a*—*b*—*c*—*d*— &c. ; physiologically, it determines the succession of nervous phenomena A—B—C—D— &c. Then it investigates which of the mental states correspond to which of the nervous changes, and how they correspond. For example, so :—



The fundamental axiom of psychology is observed; the mental series goes on by itself, and the material series likewise. The law of conservation of energy is not broken; all along the nervous series the energy remains the same.

This would have been clear from the start to everyone if it had not been for the fact that the two series as known to us are incomplete. The paths of nervous changes can be traced from the sense-organs into the brain, many efferent nerves can be traced from the brain to the muscles and glands, but of the innumerable successions and complications of phenomena between these we know extremely little. The series seems to be suddenly interrupted:—

$$A\text{—}B\text{—} \ldots\ldots \text{—}J\text{—}K\text{—}L.$$

The central parts lie beyond our knowledge. Likewise in psychology we can determine only a part of the succession of mental phenomena; *a* suddenly appears in consciousness, then *b*, then *c*, then *i*, then *k*, &c. It is an error for psychologists to suppose that the succession of states of consciousness is the whole of mental life, and that one state always brings another directly after it. It can be proved that an idea *i* follows after an idea *c*, with which it has no direct connexion;[1] parts of the succession of mental phenomena are not present in consciousness. This series also is to be represented as not continuous:—

$$a\text{—}b\text{—}c\text{—}d\text{—} \ldots\ldots \text{—}i\text{—} \ldots \text{—}k.$$

What is to be done? If we are to proceed without a violation of the psychological axiom, we have three things to see to: (1) The investigation of the missing members of the nervous series (physiology); (2) The investigation of the missing members of the mental series (psychology); (3) The investigation of the relations between both series (physiological psychology). The results can be put together, and where members of one series are wanting they can be supplied from the other series, *but only with the recognition that these are temporary substitutes.*

Suppose we have the above series with certain parts lacking, and that we have determined that each known mental phenomenon runs parallel to a nervous phenomenon: that *a* corresponds to A, *b* to B, *k* to K. Then we can say that the

[1] An experimental investigation of this phenomenon (first mentioned by Hartley and Hamilton) is to be found in a memoir by myself: "Ueber den associativen Verlauf der Vorstellungen" (*Phil. Studien*, vi. 2).

same reason why A corresponds to *a*, and B to *b*, will justify us in saying that with the greatest probability a certain nervous phenomenon, C, must correspond to *c*, likewise I to *i*, and *j* to J. Then the series will have some of their vacant spaces filled:—

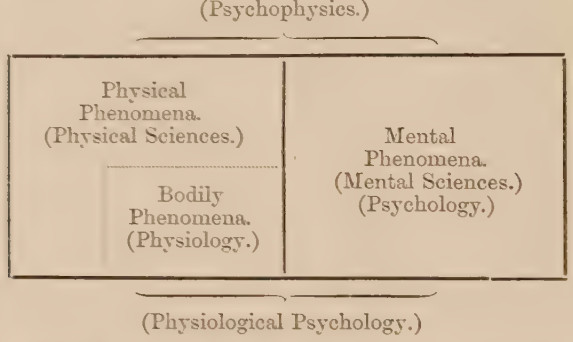
$$a\text{—}b\text{—}c\text{—}d \ldots\ldots \text{—}i\text{—}(j)\text{—}k$$
$$\text{A—B—(C)—(D)} \ldots\ldots \text{—(I)—(J)—K—L.}$$

In this way we can always hope to get nearer the truth. Fortunately just where the nervous series is out of our reach we have the corresponding mental series, and so we can attain some degree of completion. On this principle we are justified in talking about a nervous stimulation becoming a percept, a muscular contraction following an act of will, as long as we remember that these are only substitutes for unknown quantities. Thus we can say that the rays of light from an object passed to the retina and by means of chemical changes caused a stimulation of the optic nerve, that this was followed by a percept of the object, this by a feeling which in turn gave rise to an act of will; that this was followed by an impulse along the nerves of the arm which caused the muscles to contract in such a manner that the hand grasped the object and produced a change of the picture on the retina, which produced a new percept, &c. Here we have, to be sure, sprung over from nervous phenomena to mental phenomena and back again; but what we meant was really this: that the changes of the optic nerve caused a long series of nervous phenomena in the brain lying beyond our investigation, which finally resulted in an impulse along the nerves of the arm, and that, from causes unknown to us, a visual percept, then an emotion, then a volition, arose in the mind, then a different visual percept, &c., and that, since mind and nerve correspond in so many respects, we felt ourselves justified in substituting the known mental series for the unknown changes in the brain and the known impulses in the nerve and the contraction of the muscles instead of the unknown phenomena between the volition and the new percept.

It is not to be understood that, by this limitation of the problem of psychology, any opinion whatever is expressed on the relation between mental phenomena and bodily phenomena. Let the relation be what it will, the question must be kept out of psychology. As a means of doing this, we have called attention to the psychological axiom. The relation between psychology, physiological psychology, and physiology is at once clear. Physiology investigates the

nervous changes: Psychology, the mental changes; Physiological Psychology, the relations between the two. It is also to be seen at a glance that physiology stands in need of the other two, that the psychologist cannot finish his work without the others, and that the progress of physiological psychology depends on the progress of both the others. To be sure, we have narrowed the domain of psychology and given a large part of what is often claimed for it to physiological psychology, but it sometimes pays to be modest. According to this view, Psychology in the stricter meaning is a science of mental phenomena, and not of the relations between mental and nervous phenomena.

The following diagram will perhaps help to make the relations of these sciences clearer:—



The Mental Sciences are the sciences of mental phenomena: Psychophysics is the science of the relations between mental phenomena and physical phenomena;[1] Physiological Psychology is that part of psychophysics which treats of the relations between mental phenomena and bodily phenomena.[2]

[1] "Under Psychophysics is here to be understood an exact science [Lehre] of the functional relations [*function* used in the mathematical sense] or the relations of dependence between body and soul; in general, between the bodily and the mental, the physical and the psychical world." (Fechner, *Elemente der Psychophysik*, 2nd ed., i. 8.)

[2] This is different from Wundt's view of physiological psychology. According to him, it includes not only what is here understood by the name, but also all psychology in which the experimental method is applied. This would embrace more than the name itself properly allows. The determination of the duration of the higher mental processes, the investigation of the laws of association, &c., are subjects of experiment, while no account need be taken of the accompanying physiological processes. It is true that a very large part of experimental psychology

II.

Having seen the injustice of putting Psychology among the physical sciences, it now remains for us to determine what part it plays among the Mental Sciences. Mental phenomena are of two kinds; mental processes and mental products, *e.g.*, the processes, seeing and thinking, are distinct from the products, the visual sensations and the thoughts.

Now arises the question: What relations do the mental sciences bear to these products and to the activities of the mind which produced them? One after another they have come forward and appropriated what they wanted. Language, literature, and all other products of mental life embodied in language, have been claimed by philology.[1] Pictures, statues, edifices, have fallen to the respective sciences of art. The political productions are claimed by political economy, and the social productions by sociology. The religions form the subject of the science of religion. In like manner, there have arisen many other sciences of mental products. There is also a large class of sciences that treat of the development of mental phenomena, namely, the historical sciences.

But is there no science for the mental processes which have brought forth all this? There are sciences of human thoughts, sciences of human acts, sciences of imaginations; there must surely be a science of thought, of imagination, of volition. Before inquiring if such a science exists, it will be necessary to establish certain tests by which we can distinguish the true one from the impostors. It must be (1) a science of *mental processes*, (2) a *science*, in the modern sense of the word.

The science we are seeking must have for its material the mental processes,—not mind, not the relations of mind and matter, not even mental products, but only mental processes. The science of mind and the science of psychophysical relations are considered elsewhere; here we wish to distinguish a science of mental processes

owes its origin to investigations begun by physiologists, but it is also true that as large a part received its first impulse from astronomy. If the science is to be named according to its origin, it can be called astronomical psychology, as well as physiological psychology. It is with diffidence that I venture to disagree with one to whom psychology owes so much, yet some of the confusion which I am trying to put in order is due to this too broad application of a name.

[1] By philology is understood philology in its widest sense, not merely linguistics.

from sciences of mental products, and to give the reasons for the assertion that the former is an indispensable foundation for the latter. By mental processes are meant the operations to which ideas are subjected. Ideas pass through various degrees of consciousness from a minimum to a maximum; this process is called perception. Ideas of various kinds unite into one idea; this is associative union. One idea brings another after it; this is associative succession. It is the duty of our science to investigate the various processes which ideas undergo, and its interest in the ideas themselves is only secondary. Its subjects are sensation, perception, volition, imagination, &c., rather than sensations, percepts, volitions, imaginations. Our idea of a star is a quite complicated mental phenomenon; a science of mental processes should seek out the elements of which the idea is composed, and investigate the processes by which these elements are combined. For physics the star is a number of ether-vibrations; for physiology it is a complex of nervous changes resulting from the physical vibrations, and passing from the eye into the brain; but for our science it is a compound of mental elements called sensations. The combination of these sensations into a complex phenomenon, having extension, objectivity, and the property of being one of a certain kind of objects, is the result of the processes of perception and assimilative association. The distinctness of the star occasioned by noticing it especially is the result of the process of attention; the application of the name 'star' to it is the result of memory and association. Our science interests itself in these processes, not in their results. Of the thousands of ideas that pass through a man's mind in a day it takes no account except for the purpose of investigating the underlying processes. The phenomena that correspond to the sensations, *e.g.*, vibrations of ether or air, combinations of brain-molecules, are the subjects of the physical sciences; the results of the mental processes, *e.g.*, the words, the actions, the dispositions, are the subjects for sciences of mental products such as philology, science of law, sociology, &c.; but the processes through which the simple mental phenomena become such products form the material for our science.

The second condition which our science is to fulfil is that it must be a modern science. The subjects of science are facts and hypotheses. The distinguishing characteristics of modern science are the establishment of accurately determined facts and the founding of hypotheses upon such facts

alone. A would-be science that neglects any possible means of developing these characteristics finds itself at once in disrepute. The science of mental processes dare not begin with metaphysical hypotheses and twist the facts to suit them; it dare not rest contented with loose and insufficient methods of ascertaining facts.

These tests oblige us to reject "philosophies of mind" which deduce everything from an arbitrary principle. Spiritualism and materialism have no place here. It may be that the results of patient investigation lead to spiritualism, materialism, parallelism, actualism, or some other theory; to set up an *-ism* after an unprejudiced study of the facts is scientifically justifiable, but it is quite a different matter to blindly pick out some theory as a guide and to cling to it in spite of the facts.

Is there a science of mental processes? The existence of *The Senses and the Intellect* and *The Emotions and the Will* by Bain is a sufficient answer. Here the establishment of the facts is conducted with care, and with equal care the laws, the explanations, and the hypotheses are founded upon them. This example would content us if it were not for one improvement that has been made. The results of the so-called method of self-observation (by which is really meant the method of reflexion) are not as accurate as could be desired. Various observers make different statements as soon as they attempt to determine more than the general outlines. Leibniz asserted that an infinite number of ideas can be in consciousness at the same time; Steinthal declares that consciousness has room for only one:[1] between these decisions in regard to the facts there is room for rather a large number of varying opinions. Is there no way of reaching certainty in these matters? It is to Herbart[2] that we owe the first impulse to improvement. At the basis of his mental science lies the idea of the possibility of numerical determination of mental phenomena. Yet, notwithstanding this great step, he declares that "psychology must not experiment with man; and instruments thereto do not exist"; in another place he asserts that "psychological quantities are not presented in such a way that they can be measured; they allow only an incomplete estimate". Nevertheless impulses from astronomy and physiology led

[1] *Einleitung in die Psychologie und Sprachwissenschaft*, § 73, p. 134.

[2] *Lehrbuch zur Psychologie*, 1816; *Ueber die Möglichkeit und Nothwendigkeit Mathematik auf die Psychologie anzuwenden*, 1822; *Psychologie als Wissenschaft*, 1824-25.

Fechner[1] to invent methods not only for such numerical determination but also for exact experiment. The further development of the experimental methods is familiar to everyone. They are not intended to supplant reflexion : such a statement is meaningless. Reflexion, however, without the assistance of exact methods of determination, can be trusted only for general characterisations of mental phenomena. In cases like the one above, our duty is not to appeal to Leibniz or to Steinthal, but to institute experiments that will bring decisive results. The laboratories in Leipsic, Göttingen, Berlin, Freiburg, Bonn, Dorpat, Munich, Worcester (Mass.), Philadelphia, and the three special psychological periodicals, show that the exactest methods of modern science can be applied to the investigation of mental processes.

There still remains the question of the name. Experimental Psychology is not appropriate, because by laying too much stress on the methods it excludes all portions in which reliance must still be placed on general reflexion and statistics without experiments. Psychophysics and Physiological Psychology have other meanings, as shown above. Empirical Psychology is good, but it seems hardly necessary to add the adjective ; in a few years more no one will need to call attention to the fact that his psychology is empirical any more than that his chemistry and his botany are not "speculative". Psychology, with no adjectives, is probably the most fitting name.

Psychology, then, is the science of mental processes ;[2] it seeks the exact description and explanation of the operations of our inner experience.

The science of mental processes must occupy a fundamental position as the basis of the other mental sciences. History, political economy and sociology can gather facts for themselves, but as soon as an explanation is attempted recourse must be had to the fundamental principles of mental life. Philology, in the broader sense, is the science of language, as the expression of the mental life of man. Psychology must, therefore, bear to philology the relation of process to product. Steinthal recognises the intimacy of the relation by placing his *Introduction to Psychology*

[1] *Elemente der Psychophysik*, 1860 (new edition, 1889) ; *In Sachen der Psychophysik*, 1877 ; *Revision der Hauptpunkte der Psychophysik*, 1882.

[2] As far as I know, this definition originates with Wundt—"Lehre von den Geistesvorgängen". (See "Ueber die Eintheilung der Wissenschaften," *Philos. Studien*, v. 1.)

and the Science of Language as the first volume of his work on philology.[1]

III.

The third relation, that of Psychology to Philosophy, is a burning question. Much of the misunderstanding comes from ignorance of what psychology is, but the greater part from the manifold meaning given to philosophy. The following remarks on the character and position of philosophy, although very brief, may yet appear too long for this place. Nevertheless, the condition of uncertainty in regard to herself into which philosophy has sunk, and the continual confusion which this causes in psychology and other sciences, render it necessary to settle what we mean by the name Philosophy.

Philosophy is the most general science. The "most general science," however, has been variously understood. (1) According to one party it is the foundation of all others; it has in advance to develop the fundamental concepts; it is the "science of science"(Fichte's *Wissenschaftslehre*); it is the *science of pure thought previous to all experience.* All such spinning of mental cobwebs and blowing of philosophical bubbles belongs to a bygone day, and can be passed by without further remark. (2) According to others philosophy is an extract of the most important facts from all the other sciences, a sort of condensed encyclopedia of the single sciences. Such a pocket-dictionary of scientific knowledge may be very useful, but it cannot be the science of philosophy. Science is something more than a collection or a selection of facts; it is the connexion of facts according to cause and effect. (3) The third view of philosophy regards it as the science of sciences, not, however, as a doctrine previous to investigation, but as a result of all the sciences. It is not at all a mere collection of facts, but a consistent system of all the general principles.

All the special sciences treat objects from separate points of view, and each has its own peculiar method and arrives at its own conclusions. Consequently, the results arrived at stand unconnected, disproportionate and often contradictory. Such a condition does not satisfy us; there is in human nature the most commendable desire for an explanation of things. In early ages man learned large masses of facts

[1] *Abriss der Sprachwissenschaft;* I. Theil, *Die Sprache im Allgemeinen; Einleitung in die Psychologie und Sprachwissenschaft.*

about the earth, the heavenly bodies, his own passions, &c.; to-day the single sciences furnish us with immeasurable quantities of knowledge on all sorts of subjects, but we are forced by our very nature to make demands for more than facts: we must have some system, some theory, to explain the whole sum of our knowledge.

The Special Sciences, on account of their speciality, fail in completeness in three respects: (1) in regard to the general concepts and the general principles that they all have in common; (2) in regard to the general limits and determinations of knowledge and truth; (3) in regard to their fundamental methods. To correct these deficiencies three general sciences have been established, namely:—(1) Metaphysics, (2) Epistemology, (3) Methodology. These are generally called the philosophical sciences.

The science of principles, Metaphysics or Philosophy in the narrower sense, seeks from the agreement of the results of all other sciences to establish a system of the principles that underlie all existence, *i.e.*, a theory of the universe, material and mental. It also establishes a system of principles for each of the various material and mental sciences, not on the foundation of that one science alone, but on that of all the sciences. It investigates the principles of cause and effect, substance and quality, and other fundamental ideas common to all sciences.

The mental sciences yield a vast store of facts and laws. In like manner, the physical sciences and the mathematical sciences all yield an enormous amount of material. Out of this mass Philosophy proceeds to build its system. One-sided philosophies select parts to suit themselves, but such systems can have comparatively little worth. If philosophy neglects or depreciates the mental sciences, it puts up a solid mass of stone and mortar without windows or stairways or doors, and then invites us to take lodgings in this materialistic hotel. If it neglects the physical sciences, there arises an air-castle of idealism, lacking foundation and exposed to the danger of being blown over by the next breeze.

Psychology stands in a double relation to metaphysics. Together with the other special sciences, it furnishes material for the science of general principles, and thus assists in the establishment of a general view or theory of the universe. After the general principles have been determined by metaphysics, philosophy has the duty of correcting the special sciences when they set up one-sided hypotheses, and of helping where they are unable to proceed alone. Thus we have a philosophy of the natural sciences, which shows

how the hypothesis of matter explains the phenomena and laws of nature, &c. We have also a philosophy of psychology, whose duty is to show how the principles and hypotheses of cause and effect, of mind, of the psychophysical relations of identity or incongruity or parallelism of mind and matter, &c., can explain mental acts.

An example will make this clear. We continually experience the passage of ideas; they follow one another more or less rapidly, and appear to obey certain laws. It is the duty of psychology to investigate, observe and record as accurately as possible the facts of this association of ideas, to establish the laws which it obeys, to advance and test psychological hypotheses for their explanation.[1] It can set up the hypothesis that all ideas of experience are connected with each other, that ideas may be connected by means of unconscious elements, &c. So far it is a special science, the science of mental processes. It can also *test* the association according to the relation of cause and effect, or as a function of mind: but these latter and all wider-reaching hypotheses can be set up and considered for themselves only by a science that takes a position such as to command a view, not only of mental phenomena, but also of material phenomena; the hypothesis of cause and effect, or that of mind, cannot be properly set up and tested on the ground of mental processes alone.[2]

A wider-reaching science is needed; the question must be viewed more generally. A science which treats of mind or of the relation between mind and body must be to a great degree a general science; it must be philosophical or semi-philosophical. The science of mind has long been called psychology, and psychology is, therefore, considered a part of philosophy. But psychology as a special science, treating mental processes from its own standpoint, and psychology as a general science, treating mind, relations of mind and matter, &c., from the standpoint of philosophy, cannot help being two distinct things. The unfortunate identity of name is an injury to both, and sooner or later must be removed. The general tendency seems to be to settle the question thus:—"Psychology" is to mean the science of mental processes; the general science of mind is to take one of the

[1] Such an investigation is begun in the memoir mentioned above, p. 312 n. See also "Vorstellung und Gefühl" in *Philos. Studien*, vi. 4.

[2] By the term "mind" is here meant the substratum or carrier of mental phenomena; no opinion on the existence or the character of mind is meant to be expressed.

names it often goes by at the present, "Speculative Psychology," "Rational Psychology," or, better yet, it is to indicate its close relation to philosophy as "Philosophical Psychology". Such a distinction would save a great deal of confusion, and redeem both sciences from some of the discredit of the past.[1]

There is one other science commonly included in philosophy which must be taken into consideration here. The relation of Psychology to Logic depends entirely upon what logic is. This question, however, forms a bone of contention among logicians themselves. The only thing to do is to consider the relation of psychology to the various objects which are generally treated by logic. These are cognition, thought and the methods of investigation.

The relation of psychology to cognition or knowing will be clear if the distinction between special and general sciences is kept in mind. Every person has sensations, perceptions, and ideas of all sorts. These are all material for our science. But he often has sensations which he calls illusions; he has dreams, fancies, air-castles, which he more or less decidedly stamps as untrue in order to distinguish them from other ideas which are true. From childhood he has been systematising his experiences into classes of truth and untruth. This system has been ever changing, but on each occasion he decides whether he knows a thing, whether it is true or not, in accordance with his criterion, his doctrine of knowledge at that time.

The doctrine of knowledge is the science of the conditions, limits, and principles of knowledge. It seeks to determine the circumstances under which, the degree to which, and the principles according to which, our experiences can be considered true. With these characteristics of the doctrine of knowledge kept in view, psychology runs no risk of overstepping its proper limits. Presentations, ideas, feelings, thoughts, dreams, fancies, madmen's ravings, are subjects for investigation. Its duty is to determine the conditions and laws of dreaming as well as of waking; but it has not a word to say in regard to the truth of either. These are two distinct problems, and should be assigned to two distinct sciences. Psychology has to investigate the phenomena,

[1] That the difference between modern psychology and speculative or philosophical psychology is not confined to the name is indicated by the diametrically-opposed ways of gathering the facts of mental life. The old philosopher betook himself to a quiet retreat (Hume) and *thought them out*, whereas the psychologist of to-day in the laboratory carefully measures and records his experiences.

not to sit in judgment on them. The science of cognition has to accept the phenomena furnished by all of the sciences and to pass its decisions, not after hearing only one side of the evidence, but with impartiality.[1]

All agree that logic is a science of thought. But since thought is just as much as sensation, emotion, volition, a kind of mental process, it is, therefore, also a subject of psychology. That thought in waking is different from thought in sleeping; that Smith thinks more quickly than Brown; that a student of mathematics will think out the answer to a problem in geometry correctly and easily, but will make absurd mistakes in attempting a medical diagnosis, —are all interesting subjects for psychology, but lie outside of logic. Psychology treats thoughts as we think them; Logic, as we ought to think them.

Since a classification of the sciences was made above, we are perhaps justified in pointing out that there are two distinct, though connected, sciences—the doctrine of knowledge, Epistemology or *Erkenntnisslehre*, and the doctrine of methods, Methodology or *Methodenlehre*. Each of these treats of thought for its own distinct purpose: epistemology inquires what truth is and how it can be obtained; the doctrine of methods gives practical rules for obtaining it. The name Logic is given sometimes to both, sometimes only to the former, sometimes only to the latter. The doctrine of knowledge determines what the truth is; the doctrine of methods determines how we ought to think. According to this distinction, epistemology holds much the same relation to the doctrine of methods that psychology holds to pedagogy. Like pedagogy, methodology is one of the didactic sciences, whereas epistemology is one of the fundamental parts of philosophy.

The relation of psychology to these sciences can be represented thus:—

$$\text{Psychology} : \left\{ \begin{matrix} (1)\ \text{Epistemology} \\ (2)\ \text{Methodology} \end{matrix} \right\} \text{Logic} : :$$

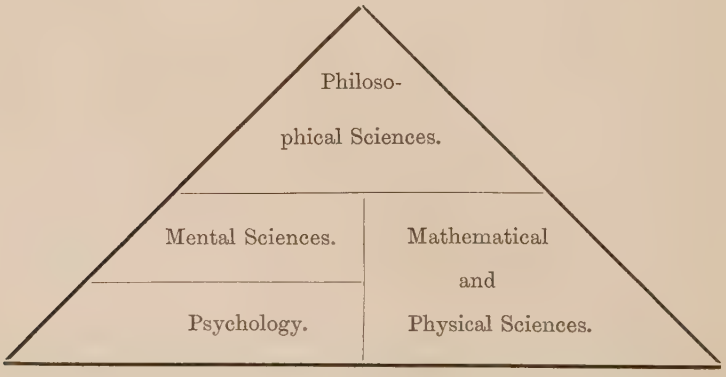
$$\text{Mental Phenomena} : \left\{ \begin{matrix} (1)\ \text{The judgment on the truth of phenomena.} \\ (2)\ \text{The methods of obtaining truth.}[2] \end{matrix} \right.$$

[1] To make confusion worse confounded, the doctrine of cognition is often called "psychology". Even the newest "Psychology" declares that "the psychologist necessarily becomes an *Erkenntnisstheoretiker*".

[2] One of the great books of the day has mixed together three sciences under the name *Principles of Psychology*. Part of it consists of the most accurate observations and the sharpest scientific thought concerning mental processes—so far, it is scientific psychology; part is a

Philosophy, as generally understood, is the sum of the three sciences—metaphysics, epistemology, and methodology; or, if methodology is to be reckoned with the didactic sciences, philosophy will include only metaphysics and epistemology. It will, however, not include psychology, physics, botany, chemistry, physiology, or any other of the special empirical sciences. The fact that physics makes use of the concepts of space, time, matter, force, &c., and that psychology investigates their mental origin, makes neither of them a part of philosophy; and just as little does the fact that psychology points out the postulate of universal validity, which always accompanies logical thought, make it a part of epistemology, or epistemology a part of it. The only sense in which philosophy can be said to include psychology is that according to which those portions of metaphysics treating of the principles of mental phenomena are often called "psychology"; but, in exactly the same manner, should those portions which treat of the principles of material phenomena be called "physics". Physics and the newer psychology are, however, something quite different from the metaphysics of matter and mind.

The following diagram expresses the relations of these sciences :—



IV.

The last relation we have to consider is that between Psychology and Pedagogy. The didactic sciences are of two

consideration of psychology from the general standpoint of philosophy, treating the relations of mind and body, &c.—philosophical psychology; part treats the relations of mental phenomena to truth—epistemology, or the doctrine of knowledge.

kinds: the sciences of the general principles or ends to be obtained and the sciences of the means to attain these ends. The general purposes can be either dogmatically or scientifically determined. "Love thy neighbour as thyself," "Know thyself," are dogmatic enunciations of general principles; "Nothing is to be believed that is not proved" can also be dogmatic; but the decision that the power of judgment is a more important factor than memory in an individual is a statement which has worth only upon scientific foundation. Have the dogmatic principles any worth as such? That is an open question. There exist, however, sciences which with proper methods establish the general objects to be sought for; these are the general didactic sciences. Among these is General Pedagogy, which determines the ends to be sought for in education.

When the general ends have been dogmatically set up or scientifically obtained, then the special didactic sciences teach the means of attaining them. The special sciences furnish the data; the special didactic sciences teach how to use these data in order to reach certain ends. Anatomy and physiology, for example, furnish data concerning the physical organism; a certain condition of the body is regarded as the proper one; it is the duty of hygiene, on the foundation of physiology, to teach how to maintain this condition. Likewise, certain conditions of mental life and certain traits of character are determined as desirable and proper; how to obtain and maintain these conditions, and how to develop these traits, are problems of Special Pedagogy working on the basis of psychology.

For psychology the ambition of Napoleon is as interesting as the patriotism of Washington; the childish thoughts of primitive tribes are even more carefully cherished than the clearest reasonings of a philosopher; they are all material for investigation. The general science of pedagogy, or some rule of life, determines that clear reasoning is better than childish reasoning; that, although to a certain degree ambition is to be desired, yet patriotism is more important. Thereupon the science of special pedagogy teaches how the desirable qualities are to be developed and the undesirable ones suppressed. Psychology furnishes the foundation of fact; the science of general pedagogy judges which of these facts are desirable, in much the same way as epistemology judges which are true; the practical duty of bringing forward or repressing these facts is the duty of special pedagogy.

In the foregoing attempt to define the problem of Psychology an establishment of the following statements was striven for:—

(1) Psychology is the science of mental processes, not mental products.
(2) It is a mental science, not a physiology of the brain.
(3) It is one of the special sciences, not a part of philosophy.
(4) It is a descriptive and explanatory, not a critical science.
(5) It is an indispensable auxiliary to the physical, other mental, philosophical and didactic sciences.

II.—THE PHYSICAL BASIS OF PLEASURE AND PAIN. (I.)

By Henry Rutgers Marshall.

I.

In an article already published (Mind No. 56) I have endeavoured to gather together in brief the psychological evidence which indicates that Pleasure and Pain are primitive qualities which, under proper conditions, *may* appear with any psychosis, whatever be its content. In closing that article I drew attention to the fact that this psychological theory, if a true one, should be found to throw light upon the problems relating to the physical basis of pleasure and pain. I shall attempt here to bring into relief the outlines thus revealed, and to show that the position already reached psychologically is corroborated, if we accept the view to which our investigation as to the physical basis of pleasure-pain phenomena leads us.

Every reasonable theory which is strongly and honestly defended is based upon some emphatic experience, which the theorist grasps clearly, and to which he attempts to relate all other experience at all connected with it. With any complex phenomena, therefore, which have been long under consideration, we may usually get at the indisputable data of experience by examining the special facts which have formed starting-points for serious discussion of the subject.

It will be found, I think, that all the most notable pleasure-pain theories may in the first instance be placed in four groups, determined by the emphasis of certain kinds of pleasure or of pain, which, therefore, we must accept as data of pleasure-pain experience.

A. The most emphatic of our experiences are the pains which we are able to connect with tissue-destruction, and the earliest theory which suggested itself may not improbably have been determined by consideration from this standpoint. The theory which Plato upheld, that violation of limit is the basis of pain, and which was probably a theory current in his day, evidently arose from such consideration. The attempt to account for pleasure as an opposite of pain led him to the materialistic theory of replenishment, as being

the basis of the restoration of limit: a theory which showed its weakness under Aristotle's rigid analysis, who felt that pleasure could not be looked upon as a *process*. As he says, "it is a whole, and we cannot at any particular time receive pleasure, the species of which would be perfected if it lasted a longer time".[1] The strength of the Platonic view lies in the fact that it serves to correlate the sharpest of pains with the pleasure of relief from pain and of rest. Horwicz, in his *Psychologische Analysen*, has adopted this theory in a form to which reference is made below. So acute a thinker as Delboeuf has formulated his views as to pleasure-pain avowedly on the same lines. As the most developed form of this theory, it deserves examination.

"Sensation," says Delboeuf, "is accompanied with a sentiment of pain as the result of approach to the limits of total exhaustion or the departure from the position of natural equilibrium. It is accompanied with a sentiment of pleasure as the result of departure from the limits of exhaustion or the approach to the position of natural equilibrium."[2] Now this theory of pain, *as it stands*, evidently fails to take account of the pains of restriction of normal activities; for reference to Delboeuf's formula shows that for him "departure from the position of natural equilibrium" means *in the direction of activity only;* and it still more evidently fails in the fact that not even all these "departures from the position of natural equilibrium" can be shown to be painful, for a large proportion of our pleasures (those of Exercise) are most evidently in the direction of exhaustion and involve a distinct departure from equilibrium. The pleasure-theory, which he directly refers back to Socrates's observation of relief from restriction, fails to take account of these same pleasures of exercise, which we shall presently see are of great importance. While the theory covers the ground of the pleasures *following* excessive, exhaustive action, it does so, I feel, on spurious grounds. For Aristotle's psychological objection remains unanswered, and on psychophysical grounds it may well be asked what evidence we have elsewhere that processes of replenishment or repair are directly, *per se*, brought into consciousness at all.

Mr. Herbert Spencer also treats of pain as due to violation of limit, pains of restriction as well as those of excess being concomitants of departures from the normal. He fails, however, to make clear why pain should arise with non-action,

[1] *Ethics*, bk. x. ch. 4.

[2] *Eléments de Psychophysique*, p. 182. I have re-arranged in translating.

which no psychophysical theory would hold to involve consciousness at all. He recognises the difficulty, but does not face it.[1] An equal failure of his theory lies in his discussion of pleasure. Since the judgment of most observers is against the view that pleasure is a concomitant of *normal* activities —as would naturally follow from the arguments which go to show pain to be a concomitant of abnormal activities—Mr. Spencer finds himself constrained to maintain the connexion with "medium" activities. That intense pleasures involve hypernormal activity we have already noted; the connexion with "medium" activity can, therefore, be maintained only on most general grounds, and definition of the word "medium" is demanded. Mr. Spencer acknowledges the difficulty here, and attempts to solve it by reference to evolutionary doctrine. On broad lines, it is evident that the extreme states of restriction and of excess with which pains occur are detrimental to the organism, and hence we have the inference that "medium" activities which are productive of pleasure are beneficial; which in a general way seems to be upheld by observation. A most interesting fact this is certainly; but, as he goes on to show, one which merely amounts to this: that if we grant pleasure to be a "feeling which we seek to bring into consciousness and retain there,"[2] that race must persist which takes pleasure in beneficial actions. Now, to me this appears to be a clouding of the question, and not an elucidation of it. The problem, as he himself states it, still remains, *viz.*, "What constitutes a *medium activity?*" He has told us: Pains are concomitants of excessive activities; pleasures are concomitants of medium activities. When we ask ourselves what is meant by "medium activities," we find merely an added reference to organic evolution, so that we are able to restate his propositions, adding the words in italics, thus: Pains are concomitants of excessive activities *detrimental to the organism.* Pleasures are concomitants of medium activities *advantageous to the organism.* But again we are brought to face the old question: How do we know non-excess, medium activity—except by its pleasure-quality, which we are attempting to explain? If the hypernormal action is pleasant it is called "medium"; as soon as it becomes painful it is said to be excessive.

[1] *Prin. of Psych.* i. ch. 9, § 123.

[2] As Mr. Edmund Gurney has noted in his *Power of Sound*, it is more than doubtful whether the ingredient of impulse implied by this definition is to be found in all pleasure, and the same may be said of pain as it is defined by Mr. Spencer.

B. Those notable pleasures of relief which come after the pains of hypernormal action have naturally led to theoretical consideration. The quiet time of rest turns one of contemplative habit to thought of the stream of consciousness, and the presence in that stream of full pleasure with remembrance of the pain-writhings of a while ago must attract attention. In this emphasis of the pleasures of rest and the attempt to relate pains to these pleasures we have the basis of certain modifications or inversions of the theories just discussed. Hence apparently the theory that pleasure is connected with equilibrium, and that pain is a state of tension, as upheld by Horwicz[1] and Mr. Leslie Stephen.[2] Some objections to this theory have already been touched upon. The explanation of the pleasures of rest depends upon restoration of equilibrium, and this position is open to the objection made above against Plato's position as to replenishment. On the other hand, the pleasures gained in exercise, as already noted in discussing Mr. Spencer's position, require a departure from normal activity in the direction of excess—a loss of equilibrium.[3]

In this emphasis of rest-pleasures we apparently have also the starting-point of those contrast-theories which in one form or another appear from the days of early Greek philosophy up to our time. Plato gave answer to the Cyrenaic and pre-Socratic theorists of his own time who contended that pleasure was mere absence from pain when he presented the notion that pleasure is determined by replenishment. He opposed their position on the ground that there is a neutral state which is neither pleasure nor pain,[4] which could not be the case if all *not-pains* were pleasures. Notwithstanding this opposition, the Epicureans clung to the Cyrenaic doctrine. In forms more or less extreme it appears in the thought of such men as Bruno, Leibniz, Locke, Hume, and Schopenhauer. But contrast cannot give a satisfactory explanation of either pain or pleasure. Although the change from pleasure to pain, or *vice versâ*, brings the newer of the two states into effective prominence, it is patent that there are many pains which arise without

[1] *Psych. Analysen*, ii. 2, p. 40.

[2] *Science of Ethics*, p. 51.

[3] While Horwicz acknowledges this fact, he escapes its difficulties by adopting the strained hypothesis that the pains attending excess are really there but covered over by the pleasure of the restored state of equilibrium, which still fills consciousness.

[4] *Republic*, bk. ix.

antecedent noticeable pleasure and many pleasures which arise out of states which involve no pain.

C. This world is full of disappointments, of curtailments, of restrictions; and it is easy to understand why the bitter pain which they bring, none too seldom to the student and thinker, has appeared to theorists to be most fundamental, the state to which all other pains and all pleasures must be related. These pains make the basis of pessimistic doctrine, and the pessimist not unnaturally finds himself making pleasure merely secondary as relief from the normal state of pain. That a large proportion of our pains are connected with unsatisfied needs does not cover the fact that excessive action in the direction which has given satisfaction of these cravings brings the sharpest of pains. That a large proportion of our pleasure is determined by satisfaction of needs does not explain those pleasures directly connected with the very cessation from activity, which, in the end, develop physical needs and their psychical cravings.

The pleasure-pain theory of Herbart and his school is almost certainly based upon the observation of restriction-pains. Beyond the difficulties just noted, however, there is an objection to Herbart's special position in that consciousness itself as we find it must, by his theory, be always dependent upon mutual antagonism of presentations, and thus all consciousness ought to be, in some degree, painful. This difficulty is but imperfectly covered by Herbart's explanation that pain is determined by arrest, which does not consciously modify the content. Volkmann avoids explanation, setting aside the difficulty in part by the summary process of supposing that, in all cases where there is no pain, the mental side of the process is below the threshold of consciousness. He endeavours to make the position clearer[1] also by supposing mood (Stimmung), an expression of vital function, to have a unity of its own; an unyieldingness (Unnachgiebigkeit), which covers not the whole quantum, however, but a mean between two extremes. Where the contrast within the sphere of yieldingness is brought into consciousness it gives us disagreeableness and not pain proper.[2] Pain is thus due, not to a mere increase of an indifferent stimulation, but to an opposition between stimulation (Reiz) and mood (Stimmung), the conscious side of vital function. On the other hand, Herbartians would

[1] *Lehrbuch der Psychologie*, i. 242-8.

[2] This distinction between disagreebleness and pain seems to me to be not warranted by experience.

determine pleasure by the superfluity of the mutual support which presentations give one to another:[1] and this suggests the query: What support can be superfluous under the Herbartian view? This building-up of theory, hypothesis upon hypothesis, ingenious and brilliant as it is, is not *proper* to psychology unless it overcomes the difficulties connected with the problems involved; which, in my opinion, this theory fails to do. As Wundt[2] points out, the greatest difficulty with it is that it is unable to explain the simplest sensual pleasures. What is accomplished is, after all, little more than a restatement of ignorance with pretence of scientific form.

D. The pleasures which are obtainable from bodily exercise have with good reason attracted attention, and it is not unnatural that the earlier races whose lives were filled with physical action, with whom fame was determined by skill and strength in muscular performance, should have made this emphatic pleasure the beginning of consideration. This was the basis of Aristotle's theory of pleasure, which, doubtless, embodied the thought of many before him. His theory, unfortunately, has not come down to us in such clear-cut and complete form as we could wish. We may put it thus:—"Pleasure is the accompaniment of the energising of a sense in perfection when to it is presented a suitable object of the most perfect kind".[3] Although the theory as stated is far from satisfactory, Aristotle's enormous influence has led to a special study of the pleasures of exercise, and to this study we may trace a large proportion of the best thought-out theories of the past. These theories, although open to serious objection, show persistent life which argues not the blind following of a leader, but conviction, which Aristotle himself must have felt, that in the pleasures of exercise we shall find the key to the psychological problem of pleasure and pain. The theory, therefore, deserves more than ordinary attention, and I shall return to it later; here I merely wish to note its weakness, as pointed out by J. S. Mill in his *Examination of Hamilton*, who adopts the Aristotelian view in a slightly-modified form. Mill shows that

[1] Cp. MIND, xiii. 489.

[2] *Phys. Psych.* i. 534 (3te Aufl.).

[3] In *Ethics*, bk. x. ch. 4, he tells us (Browne's translation):—"Pleasure perfects an energy". "The most perfect is the most pleasant; and the most perfect is the energy of that which is well disposed with reference to the best of all the objects which fall under it." And again, in ch. 5:—"Pleasures contribute to increase the energy". Cp. also Hamilton's interpretation, *Lects. on Metaph.* ii. 452.

the perfection of action, in a large proportion of instances, gives no sign except the pleasure itself which it is held to explain (and similarly, *mutatis mutandis*, of pain); hence, if the theory be stated in the form of propositions for pleasure and for pain, these propositions are inconvertible.

The theory has been felt to be incomplete, but the pleasures of exercise which it emphasises have suggested other theoretical positions. Leibniz, following Hobbes, held that pleasure is due to the cognition of furthered vitality; and pain to the cognition of depressed vitality. This theory has been especially suggestive to many later writers. Bain's "Law of Self-conservation" reads thus:—"States of pleasure are connected with an increase, states of pain with a decrease, of some or all of the vital functions".[1] Höffding holds that "pleasure in any case stands as the expression of increased life, and pain as the expression of a falling-back".[2] Fouillée expresses his theory in almost the same terms.[3] Bouillier's[4] atomistic theory that "love of life is the basis of and the typical pleasure," and "fear of death the basis of and the typical pain," tells the same tale, and we find the same general notion in more casual expressions, such as that of Clifford, that "the sense of increased power is the basis of all higher pleasure".

Bain's law, as being the most known, may be taken for consideration. Pleasure, he says, is connected with an increase of some or all vital functions; pain, with a decrease of some or all vital functions. If we attempt to convert these propositions we find ourselves at once in difficulty. It surely is not true that *all* increase of vital function is connected with pleasure, for in the case of specific organs pain accrues when the action is increased until it has become excessive, as common speech has it. It is equally certain that not *all* decrease of vital function is connected with pain, for the lowering of the functioning of a specific organ which has been bringing pain often yields us pleasure. In such cases it may indeed often be shown that the pain has been connected with a decrease of energy in the system as a whole, and the pleasure with a corresponding general increase of potentiality. Hence it appears that the law, to hold at all, must be referred to the organism as a whole, and not to the organ

[1] *Mind and Body*, ch. 4.
[2] *Psychologie*, p. 344.
[3] *Pop. Science Monthly*, xxxi. 818.
[4] *Du Plaisir et de la Douleur.*

which is active. This may, perhaps, be made clearer by taking one of Prof. Bain's instances. "The pleasures of healthy exercise and of rest after toil" are evidently both connected with processes indirectly increasing the vitality of the *organism;* but if the application of the principle be attempted in reference to the active organ, vitality means two different things in the two cases. In the case of healthy exercise it means increased vital functionmg, and in the case of rest it means *capacity for* increased vital functioning. It is the same with pain. Pains of restriction and of "excess" are both connected with processes indirectly decreasing the vitality of the *organism.* If, however, reference be made to the *active organ,* decreased vitality in the case of restriction means decrease of vital functioning; while in the case of "excess" it means *decrease of the capacity to function in the near future.* But if we give the law reference to the organism as a whole, it seems to me it is still open to very grave objection. Painful fatigue, for instance, which certainly is not *directly* connected with decreased vital functioning of the organism, is not even always *indirectly* connected with it in the long run; for, while the *capacity to function* decreases temporarily, it is not infrequent that painful fatigue, if not carried too far, is connected with the growth of powers, which, on the whole, add greatly to our vitality. It becomes necessary in such cases to shift back again and to refer the loss to the capacity of the specific organ. Again, certain specific pleasures bring general organic detriment, and we are forced here to refer the *pleasure* to the gain of activity in the special organ itself. This necessary shifting of ground is very unsatisfactory.[1] That there is an important connexion between pleasure and pain and heightened and lowered vitality respectively for the organism is apparent, but that the connexion is indirect is evident also,—as is acknowledged by Prof. Bain himself in drawing attention to such startling exceptions as the painfulness of the cold bath which is advantageous, and in explaining the "painlessness of certain diseases" on the ground that "the connexion of pleasure with vitality, and of pain with feebleness, does not apply to all organs alike".

Prof. Bain, in his supplementary law of "Stimulation and Exercise," makes a step away from the general vitality-theory in the direction of exclusive reference to the organ whose action is involved in the mental content. When he tells

[1] Cp. Sidgwick's *Method of Ethics,* 4th ed., p. 185.

us that "to stimulate or excite the nerves with due regard to their condition is pleasure, to pass the limit is pain," he turns our attention to the examination of the specific nerve-organ involved and not to the vitality of the whole system.[1] In this direction we shall presently follow him: but his theory, as stated, is not of great practical value, for what "due regard to their condition" means is not evident, and so far as I can see we have no guide to show us when the nerve is acting with this "due regard" other than the pleasure itself which we are endeavouring to explain. Such a form of argument in Hamilton has received the full force of J. S. Mill's cutting criticism, as above noted.[2]

Mr. Herbert Spencer's theory of pleasure-pain, above touched upon, appears on its face to be a version of the vitality-theory; at all events his words lead one to believe that he so considers it;[3] but, as I have above shown, his argument relates rather to the present distribution of pleasures and pains in the race than to their essential nature. Like Bain's, it cannot claim to be more than a law of indirect application, and it is of less value than Bain's in one view, because founded so largely upon hypotheses which are not above suspicion. Evolution has done little for us on the whole in its most noted supporters, except in the strong emphasis given by Mr. Spencer to the fact, long before noticed, that the theory which traced pain to restriction and that which traced it to excess of action may both be correct in part. Difficulty arises in defining what is *too little* and what is *too much;* and, further, in defining the conditions of pleasure as apart from the wide region between the two states of pain, which is ordinarily called indifferent. Dumont, in his *Théorie Scientifique de la Sensibilité*, after a very thorough review of the work of his psychological predecessors, has adopted what is essentially a restatement of the vitality-theory in a form which appears on its face more scientific, but which proves no more satis-

[1] It is to be noted, however, that Prof. Bain (*Senses and Intellect*, p. 295) is not willing to allow that it is proper to rely exclusively upon the effect in the organ of the content.

[2] Prof. Bain (*Mind and Body*, p. 62) holds that "the principle connecting pleasure with increase of vital power receives confirmation from outward displays under pleasure and pain". But I feel that if this prove anything it proves too much; for, as Fechner has noted (*Vorsch. d. Aesthetik*, ii. 265), the greatest pains stimulate us often in the strongest manner, and it is impossible to refuse to call this a heightening of life, if we are to explain thus the expressive action in cases of pleasure.

[3] *Prin. of Psych.* i. end of § 123.

factory. According to him (p. 67) pleasure is determined by an augmentation of the *ensemble* of forces which go to make up the Ego, and pain by their diminution. This definition is open to all the objections which Mill raised against Hamilton—which Dumont, however, waives aside as unphilosophic—and in its application is open to many others, consideration of which would be out of place here. It may be mentioned in passing, however, that he is able to explain the facts which experience gives us only by a shifting of term-meanings. "Force," as he uses the term, in some cases means what is ordinarily called *activity of nerve*, and in other cases it means *ability to act*. Paulhan[1] has referred pleasure and pain respectively to increased and decreased nervous systemisation, which, I take it, is a modification of the vitality-theory, but not an advance.

Closely related to these theories, but separated from them as leaving physiology aside and being purely psychological, we have Dr. J. Ward's very notable restatement of the Aristotelian position. "There is pleasure," he holds, "in proportion as a maximum of attention is effectively exercised, and pain in proportion as such effective attention is frustrated by distractions, shocks, or incomplete and faulty adaptations, or fails of exercise, owing to the narrowness of the field of consciousness and the slowness and suddenness of its changes."[2] As this statement is not correlated to physiological conceptions, it is, strictly speaking, apart from our subject just here, but it may be appropriate to note that we do not find what is to tell us when the exercise of attention is effective except the pleasure, or when it is frustrated or fails of exercise except the pain.[3] Nahlowsky's theory, that pleasure-pain is the immediate consciousness of the moments of rising or lowering of its own psychic life-act, is evidently an outcome of the consideration of exercise-phenomena, but it has stepped away from the effort to give a purely psychological explanation of pleasure-pain facts in the direction of such metaphysical statements as we find in Descartes, Kant, Lotze, and Wundt[4]—all of

[1] *Phénomènes Affectifs*, p. 96.

[2] *Encyc. Brit.*, art. "Psychology".

[3] Note objections raised by Mr. F. H. Bradley, MIND No. 49.

[4] This, so far as Wundt is concerned at all events, is not to be looked upon as any *knowledge* of advantage or disadvantage, whether conscious or subconscious; for he objects to any *Erkenntnisstheorie* of this kind on the ground that it first seeks the objective cause of feeling (Gefühle) in order to transfer to itself the original essence of feeling (*Phys. Psych.* i. 540). And so with Lotze, who holds that pleasure is felt when the

which gain their inspiration from the conception of healthy exercise, and which may be summed up in the words of Horwicz:—"All pleasure-pain (Gefühl) is the direct expression of the impulse towards self-maintenance of the soul: which feels that pleasant which harmonises with the conditions of well-being, and the opposite unpleasant".[1] This is not far from Lipps's theory,[2] which relates pleasure and pain to intensity which, in certain degrees, is favourable (günstig to the soul and then gives pleasure: when, on the other hand, it is an obstruction (Hemmung) it gives pain. The theory cannot be carried into detail without raising a demand for other conditions than mere intensity. Certain intensities which give me pleasure in a certain psychosis at one time will give me pain at another. Many other difficulties of a kindred nature appear upon a close consideration. From here the step is short to mystic self-deceptive positions, which give us under the form of explanations mere verbal elaborations of our ignorance.[3]

Such purely destructive criticism as I have above indulged in is always unsatisfactory, for it seems to indicate lack of appreciation of the value of the thought which others have given to the subject reviewed. But here I can do no more than state the grounds which lead me to discontent with the theories discussed. All theories worthy of note will be found, I think, to be reducible, in whole or in part, to one of those mentioned. And, while this examination has given us little upon which to rest, we have at least pointed out some few cardinal facts which must be explained by any satisfactory theory, and which may well form the starting-point of our investigation here.

1. There is a general agreement, with but few dissenting voices, that all pleasure is at the bottom the same thing, and

soul grasps the fact that hypernormal stimulation carries with it an increase of restored capacity; pain, when it grasps the fact of a decrease (*Med. Psych.* p. 286). He was too clear a thinker to identify this increase of restored capacity with direct increase of vitality, as we have seen some of our modern authorities have done. He feels it necessary to place the soul, as that which grasps, between the "feeling" and what is to result from the action to the benefit of vitality.

[1] *Psych. Anal.* i. 169.

[2] *Grundtatsachen des Seelenlebens*, pp. 206 ff.

[3] What gain is there to knowledge in such words as these:—"Als den Ausdruck jener inneren Beziehungen, in welche eine Vorstellung oder eine Verbindung von Vorstellungen zu dem allgemeinen Bewusstseinszustände des Individuums tritt, betrachten wir die Gefühle"?—Kraepelin, *Phil. Studien*, ii. 327.

that all pain in its essence is a single psychological phenomenon. What is more, there is always found the same practical agreement that pleasures and pains are or should be unifiable: that we should be able to bring them into clear and intimate relation with one another.

2. There are certain facts so marked in experience as to have become the basis of the majority of pleasure-pain theories. These must be explained and related to each other:—

(1) All pleasures which we can experience may be referred to one of two great classes:—

(*a*) Induced by active functioning.
(*b*) Connected with cessation of activities.

(2) There are states, which are usually called indifferent, in which we note no distinct pleasure- or pain-quality.

(3) All pains which we can experience may be referred to one of two great classes:—

(*a*) Connected with excesses of function.
(*b*) Connected with failures to function.

It must be our aim, so far as it may be possible, (α) to find a single basis for all pains and a single basis for all pleasures; (β) to find a common ground for unification of pains and pleasures; (γ) to sketch a theory which shall explain the facts acknowledged in the experience of thinkers as indicated by their theories; and (δ) to discover the basis of truth in the notable expositions which have come down to us.

II.

The reader who has noted the wide influence upon theory, produced by the experience of pleasurable Exercise, will not regret that my own consideration leads me to ask attention at the start to the theory which these experiences have developed. For surely the line of thought to which masterminds have again and again returned must be worthy of especial consideration, even if it has not given us the solution of our problem. In these days of reading and writing and thinking, the pleasure of exercise suggests the wide field of intellectual activities, as well as those which are, in a way, judged less noble. But the pleasures of the exercise of definite bodily organs are so vivid and typical that to them we certainly should look at the outset.

Aristotle's definition makes reference to perfection in the object stimulating the active organ. Whatever this perfec-

tion may mean, it is apparent that the condition of the organ which acts determines the pleasure-pain quality, for, with no change of object, or of the stimulus which it brings, there is very frequently a complete change from pleasure- to pain-quality, and this can only be accounted for by some change in the receptive organ.

Upon a superficial examination it seems natural to connect the pleasure of exercise in an organ with the efficiency of that organ, *i.e.*, with its ability to function vigorously. Pain, as involved in exercise, on the other hand, appears as similarly connected with an inefficiency in the organ—an inability to function normally in relation to the stimulus received. It will presently appear also, I think, that this position, while requiring explanations and definition of terms to bring the different pleasure-pain facts into relation, on the whole does not present any formidable difficulties *so long as we understand it as the interpretation of pleasure and pain in connexion with the action of the specific organ which is giving us the content of consciousness.* But the modern notion which leads us to look upon the "brain as the organ of mind" and treats all the rest of the nervous system as mere *antennae*, so to speak, for this living, assimilating psychic centre, has led thinkers not unnaturally to take for granted that pleasure and pain have each a special *locus* in the brain, so that if the proper tracts are stimulated in one case we must experience pleasure, and in the other we must experience pain.[1] Here, however, arises a notable difficulty. Our pleasure-pain experiences shift from one phase to the other with the greatest possible rapidity and variableness with change of mental content, and this is incompatible with a theory which relates pleasure-pain to the efficient or non-efficient action of a brain-organ; for there is no reason at all to believe that the conditions of efficiency can so rapidly change as would be necessary for an explanation of the facts.

This difficulty, perhaps but dimly felt, leads to reference of the efficiency away from any special organ to the or-

[1] It is very natural that this step should be taken; the more so that so large a proportion of our pleasures and pains are not traceable to any special terminal organ-activity. That it is felt, however, that the pleasure-pain quality is really bound up as a quality of the content in the case of terminal organ-action is indicated by the theoretical search for a special kind of pleasure-pain conduction in the nerve carrying the stimulus to the brain, or for special pleasure-pain fibres bound up with the sensory fibres carrying the stimulus to the special pleasure-pain organ in the brain. (Cp. Lipps's *Grundtatsachen*, pp. 196-7; also Wundt, *Phys. Psych.* ch. iv.)

ganism as a whole (whence have arisen the vitality-theories with all their difficulties already referred to), and then by another step to a practical abandonment of the whole search, psychological and physico-psychological, in the theory that we have in pleasure-pain a separate kind of mental action—in fact, another mind than the knowing mind; two individualities, so to speak, on friendly terms with one another and walking hand in hand, but for all that separated by a great gulf of incompatibility which neither can overpass. And this, in its final outcome, must lead away from psychological to metaphysical position.

I have already argued (MIND No. 56) that there is every reason to look upon pleasure and pain as qualities which, given the proper conditions, *may* belong to any mental content, — qualities bearing a general resemblance to the quality of intensity, but with this evident difference that intensity in one shape or another *must* always be of the essence of each and every mental content. This view leads us back to pure psychology. The search for and localisation of organs of special mental contents does not now detain us, because, *wherever* the organ of the content may be, *there* will be the centre of the pleasure-pain quality. Holding this position as to the psychological nature of pleasure-pain, we find, it appears to me, the true interpretation of the Aristotelian efficiency-theory.

It was the observation of efficient or non-efficient action in organs which were clearly known that gave the theory its birth, and to these data of experience we return, but with a wider view of what an "organ" means in this connexion. From this standpoint the theory may read thus:—*The activity of the organ of any content if efficient is pleasurable, if inefficient is painful.*

Two difficulties at once become apparent:—

(1) An explanation is necessary as to the meaning of "efficient" and "inefficient". Discussion of this—the more important—difficulty I postpone for the moment.

(2) It seems apparent that two great classes of pleasure-pain are not covered directly by the theory, *viz.*, the pains involved in restriction of activity and the pleasures occurring with rest.

Those theorists who referred efficiency to the organism were able to overcome this second difficulty; for restricted activity is detrimental, and rest after extreme action advantageous in the main, to the organism as a whole. But, as we have seen, this reference to the advantage or disadvantage of the organism is fraught with difficulties

when we take into account those often-noted instances where sweets mean death and pains mean future vigour. These special facts point to the very position which we now wish to examine,[1] *viz.*, that the inefficiency and efficiency of which pain and pleasure tell us are inefficiency or efficiency in the organ which is active in producing the content to which the pain or pleasure is attached. When we consider these states from this standpoint, we at once note that restriction of the normal activity in an organ clearly does not imply *action*, but rather *non-action*, in the organ restricted, nor does it imply *inefficiency* in the organ restricted. So restriction of the excessive activity of an organ in pleasurable resting evidently does not mean an efficient action in *that* organ. Restricted or sub-normal activity, in fact, really implies a shifting of psychosis, and *per se* involves the notion that the pleasures or the pains in such cases are determined by the functioning of other organs than those restricted. In fact, the difficulty here disappears altogether, it seems to me, if we take the view that the pain in one case and the pleasure in the other are due to inefficient action and efficient action respectively in other organs than those involved in the content which is restricted or quiescent. For is it not clear, when we come to think of it, that the pains of restriction and the pleasures of rest are systemic in origin? They differ most markedly from those pains and pleasures of action which cling to distinct and definite contents. They have no marked *locus*, are connected with no developing mental object.

My own experience tells me that, when an organ which has been over-stimulated is rested, the pleasure obtained is not only wider than was the pain which went with the over-stimulation, but that the content to which the pleasure clings is apart from the content which went with the pain: that when a normal action is restricted the pain is equally wide and has a content apart from that which would have gone with the normal action. In fact, the common occurrence and emphasis of this form of systemic and unlocalisable pleasure and pain enables us, in my opinion, to account for the existence of the notion that pleasures and pains are phases *sui generis*—unlocalisable, uncognitive. If, then, these particular pains and pleasures are connected with mental states which are barely above the threshold of consciousness and so widely distributed that no specific

[1] Cp. Lotze, *Med. Psych.* pp. 237 ff.; and Volkmann, *Lehrb. der Psych.* i. 230.

content can be attached to them in reflexion, it may be that they are still due to activities which are respectively inefficient or efficient (whatever these terms may be found to mean). We may defer further consideration of these pleasures and pains, therefore, until we have looked more closely into the nature of those which involve distinct mental contents, and by implication action in nerve-concomitants of the whereabouts of which we may reasonably claim to know *something*.[1]

Returning, then, to the pleasures and pains of organic activity, we must ask what means *inefficiency* with which we relate pain, and *efficiency* with which we relate pleasure. We call an action inefficient when the outcome of a certain stimulus is less than the outcome we looked for as the result of our experience. As our experience varies, so will vary our notion of inefficiency; but, on the whole, we gain a fairly fixed notion of what we, in agreement with others like ourselves, ought normally to expect in the case of organs which are frequent in their action, and the variations of whose action in relation to varying stimuli have therefore become matters of full experience. The notion of inefficiency thus reached is an ill-defined one, to be sure, but it is fixed in our thought by the fact that with the failure to meet our expectation in this regard often springs up the special and notable quality which we call pain.

The emphatic cases which attract attention also are those in which we find (1) an unusual increase in the frequency of recurrence of the stimulus. The leg-muscle which is accustomed to contract at short intervals for an hour each day in a walk begins to produce pain if the exercise be continued for two hours, and we soon find that with this constantly-increasing pain goes a constantly-decreasing action of the muscle under a normal stimulus, or demand for increased effort to induce the continued action.

In another set of cases (2) we find the rhythm of stimulation not abnormal but the amount of the stimulus greatly increased; and here, too, we find pain and re-action less than experience leads us to look for. The man who constantly uses his hand in writing or drawing some day attempts to cut down a tree and finds the muscles of his hand which held his pen or pencil failing him rapidly and painfully.

(3) Still another set of facts attracts attention. The writer or draughtsman is some day reduced to weakness by

[1] It should be noted here that Bouillier (*op. cit.* p. 94) explains the pleasures of rest as systemic. (Cp. also Bain, *Senses and Intellect*, p. 283.)

fever. He resumes his duties, but finds that normal work of writing or drawing soon brings pain and inefficient outcome.[1]

The first set of cases leads us to look for some condition of the organ which is relatively constant in time, and which has been disturbed by the abnormal rhythm of the recurring stimulus.

The second set of cases leads us to look for some condition of the organ which is relatively constant in amount, and which has been disturbed by the abnormal amount of stimulus.

The third set of cases leads us to see that this condition, relatively constant in time and amount, is disturbed by systemic weakness.

The thought of one who is acquainted with but the rudiments of physiology at once turns to the nutritive conditions

[1] Since the above was written, I have read the very interesting article by Dr. Warren P. Lombard in *Am. Journal of Psychology*, iii. 1, in which he records his discovery that a hypernormally-used muscle is subject to rhythms of inefficiency alternating with corresponding rhythms of recovery of ability to act. I have used the illustrations as to hypernormal muscular action and inefficiency merely by chance : had I spoken of action in any other organ it would have served me as well. I do not change my illustration because I feel that the experiments referred to do not controvert the fact that recognised loss of efficiency goes with recognised increase of weariness-pain. Dr. Lombard's results, as thus far published, do not show that this power of recovery is retained indefinitely, nor has he noted (as he kindly informs me) whether there is a rhythm of loss of pain corresponding with the recovery of power. In fact, I think it will be difficult to obtain satisfactory data on this point, because of the lack of a unit of measure for pain. I may note, further, that I do not claim that the relation of pain to inefficiency is necessarily in the muscle-organ nerves themselves. Personally, I have not confidence, such as most psycho-physicists express, that we are in possession of any very accurate knowledge as to the exact whereabouts of the organ, action in which corresponds to the psychic content in these cases of muscular action. All that I here claim is that the organ which gives the content gives it painfully if the action be inefficient. Perhaps I may hazard a suggestion. It seems clear from Dr. Lombard's experiments that the loss of efficiency is not in the muscle, but in some centre brainward, for the muscles when voluntarily incapable reacted normally to electrical stimuli. Is it not possible that this rhythm of restored power really means the action of a new organ, so to speak? Nerve-centre A may have connexions through nerve-courses B, B^1, B^2, B^3, B^4 to muscle C. The normal course may be almost altogether through B and very slightly through B^1, B^2, B^3, B^4; but, destroy the efficiency of B, and given the same energy in A, the course B^1 may open up to full activity and bring again into action the muscle (the power of contraction not having been lost) painlessly so long as B^1 works efficiently, painfully when it acts inefficiently. When it loses its efficiency a new course, B^2, is opened up, and a new recovery of power obtained.

of the organs which are governed by nervous stimuli, largely separate from the systems reactive to stimuli connected with the emergencies of life: conditions which are constant in time and amount relatively to the intermittent action of the nourished organ, and which, on the other hand, are likely to be disturbed by general derangements of the body which affect their practically separate nervous system.

Now, let us turn to the notion of organic efficiency as related to pleasure. Efficiency, like inefficiency, is an ill-defined notion, and one relative to our experience. We call an action efficient when the outcome of a certain stimulus is *greater* than the outcome which we looked for. Variable as is our experience, still we gain a fairly fixed notion of the action to be expected as the outcome of a given stimulus, and, when the outcome is greater, it becomes the centre of attention with the pleasure which accompanies it. Here, as with pain, there are (1) notable cases where there is an unusual increase in the frequency of recurrence of the stimulus coupled with pleasure-getting. The muscular contractions at the beginning of a vigorous walk are pleasurable.

(2) There are notable cases where the rhythm of stimulation is not abnormal, but the *amount* of stimulus is hypernormal. The commonplace observation, that both pleasant and painful states weary and exhaust the frame, finds its justification in this hypernormality common to the two states. It is to be especially remarked here, however, that hypernormal rhythm and amount of stimulus usually give pleasure only temporarily. Pleasure is evanescent, the quality quickly fades into "indifference" or changes to pain, and the pain of hypernormality, either of rhythm or amount, is very much more permanent. It is at the beginning of the increased rhythm of action or of the unusual degree of activity that the pleasure is obtained.

Again (3), there are many cases in which normal action brings pleasure after an unusually prolonged rest. The muscles which we use every moment of the day, and with indifference, are used with pleasure by the healthy man when he awakes after a good night's rest.[1] Here, as in

[1] It has not seemed necessary to give fuller examples of the connexion between pain and the hypernormal rhythm of action, or hypernormal amount of action in the nerve-organ, nor of the relation of pain to normal action under conditions of debility; for such examples will instantly occur to the reader. I think instances will almost as readily appear in corroboration of the statement that normal action brings pleasure after an unusually prolonged rest.

After the quiet of the night-hours the bird-song, as we awake, is more than usually pleasurable; the rested eye sees beauty in all colours.

the case of pain, the first and second sets of facts lead us to look for some condition of the organ which is relatively con-

The rubbing, at our morning bath, of the skin, which has not during the night felt the normal friction of our clothing ; the flavour of some special food to which we have been accustomed, but which has not lately been tasted,—all are pleasurable. The burst of delighted admiration and love for a friend whom we have not seen for a while; the zest with which a student takes up his line of thought, after it has been broken off for days by some necessity, —point in the same direction. In fact, I would not think of cumbering this article with these examples, were it not that Helmholtz, in elucidating his famous theory of discord, makes statements which, at the first glance, seem to deny the fact. It is, to be sure, apart from his subject to describe the nature of pleasure or of pain, but in explaining the phenomenon of discord in terms of aural beats he places the essence of the phenomenon in its painfulness, and brings this painfulness of aural beats into direct relation with the painfulness occasioned in the eye by flickering light. He then states that this painfulness in the eye is occasioned by the frequent repetition of the case where a new stimulation affects an organ which is at rest, which action he states to be painful, basing this position on the fact that the eye finds it painful to pass from a dark room in which it has been for some time into a glare of sunlight—a painfulness which gradually fades away if one remain in the brighter light.

There is no question as to this last fact, and the interpretation which he puts upon it seems also altogether correct, namely, that the whole state of the eye has become accommodated to the low conditions of stimulation obtaining in the dark room, so that the stepping into a glare of light is (as in my view) a case of hypernormal amount of stimulation. The extraordinarily rapid automatic methods of accommodation which obtain in the action of the eye, however, speedily rectify the conditions to enable the eye to act normally under the increased stimulus, and the pain therefore disappears. It is to be noted, however, that this obtains only provided the stronger stimulus is one to which the eye has been accustomed to answer periodically. If it be more excessive, then, accommodation being impossible, the pain does not disappear by continuance of the stimulation. *Now, this argument would be a clear corroboration of my position did he not distinctly speak of the condition of rest in the organ as the basis of the pain, instead of laying emphasis, as he should, upon the condition which, in the case in hand, this rest implies, namely, the rebalancing of the organ to fit it to answer to stimuli of low amplitude only, so that what are not unusually high degrees of stimulus are in fact relatively hypernormal in reference to the organ's condition.* If he had stated his case in this way, and had found it adequate to explain the flickering pain of light as a rapid recurrence of conditions of excessive stimulation, the same explanation would apply to aural flickering. I am not sure, however, that he would think this explanation adequate to cover the ground of the painfulness of flickering in general.

It seems not impossible, on the other hand, to make the explanation of the phenomena in the eye turn upon hypernormal rhythm of action in the organs related to the accommodative process—notably the iris. If this be an adequate explanation of the pain of ocular flickering, it points, in the case of aural flickering (beats), also to an explanation turning upon hypernormal rhythm of action of accommodative organs ; and, by the way, is a bit of evidence in favour of the contractile action of the tympanum in such accommodation—to which view some later physiologists are turning.

stant in time and amount, and the third set turns our attention again to systemic conditions. The three together, as in the case of pain, lead us to judge *a priori* that pleasures are involved with the nutritive conditions of the active organ.

We are able, therefore, to make an important preliminary step in laying down this principle:—

All pleasure-pain phenomena are determined by the action in the organs concomitant of the conscious state, as related to the nutritive conditions of the organs at the time of the action.

It appears to me that we have reached here the solution of the second of the general problems which we saw before us at the end of the first part of this article, *viz.*, we have found the basis of that coupling together of all pleasures and pains which is so universal, although these states are acknowledged to be distinctly diverse.

We must now turn to the consideration of the grounds of this diversity. It is apparent, upon observation, that if in any given case the conditions as to action and as to nutrition remain unaltered, the pain in the main tends to increase. If the state be one of pleasure, however, the stability of the same conditions brings about decrease of the pleasure. This points to something *used up* in the case of pleasure, and the fact that there is *something to use up* points to storage. Turning to another point of view, we reach the same result.

As we have already seen, both pleasures and pains are produced at times by action of unusual frequency, and again by action of unusual amount. Mere rest, however, in an organ which is often active will give to normal action a pleasure-quality which would not appear without this abnormal rest. It is also to be noted that it is the early stage of hypernormal rhythm or amount of stimulus which brings pleasure, and evidently rest is here also a condition of importance. The difference between the hypernormality of pain and of pleasure, therefore, seems to turn upon the fact that pleasure is obtained where the organ has been *rested*.

Now, what does this rest imply?

The processes of nerve-nutrition are relatively constant. The regular rhythm of normal pulsation but marks the constancy of the flow of blood through the nutritive channels. Apart from this rhythmic cadence, indeed there are changes in the course of the flow which are very important, but they do not take from the general fact that, relatively to the activities of our expressive life, the nutritive action is constant. Where the action of a nourished nerve is equally

constant, or where its rhythms of action are comparable with those of the blood-supply, the energy used will equal the energy supplied. Where an organ is used irregularly the constant flow continues to bring life to the organ, but there is no regular use of the power gained to correspond with this constancy of income. Under such conditions it will evidently be of the greatest possible advantage to the system to store up in some way this power ready for use when the irregularly coming stimulus calls for action. That there exists such power to store up force, so to speak, to increase potentiality, during the intervals between action whilst the flow of power-giving nourishment remains constant, cannot be doubted. That a race like ours, which is adapted to answer to the most forcible and irregular of stimuli, could have come to exist without such power is hard to conceive. Given these facts, rest in an organ which is sometimes active means storage of energy; and action after rest means the use of stored energy. But, as we have seen, action of an organ after rest gives a psychic content which is pleasurable; hence we have the working hypothesis:—

(1) Pleasure is experienced whenever the physical action which determines the content involves the use of stored force —the resolution of potential into actual energy; or, in other words, whenever the energy involved in the reaction to a stimulus is greater in amount than the energy of the stimulus.[1]

[1] The Peripatetic doctrine seems almost to involve this position indirectly, if one keep clearly in view the notion that pleasure is a *general* quality. The principle has been *incidentally* recognised by many thinkers, but, so far as I know, has not been made a fundamental principle by any psychologist, with one exception to be noted. For instance: Lotze (*op. cit.* 285) recognised that pleasure and pain both turned upon the using-up of capacity, but he referred the difference between the two to a recognition by the soul, whether the organ was or was not going to be able to gain after this over-use a heightened capacity for action, to the general organic advantage or disadvantage.

Horwicz (*op. cit.* iii. 40) recognises the fact that use of surplus force is involved in pleasure-getting, but deals with it as a restoration of equilibrium, which equilibrium is disturbed either above or below the normal where pain exists. Mr. Grant Allen (*Phys. Aesthetics*, 35) tells us that "all strong pleasures result from the escape of stored up potential energy which has been hoarded for a considerable time"; but, for all that, he holds that "pleasure is the concomitant of a *normal* amount of function in sentient tissues". These statements seem to me to be in effect contradictory, and the latter to be in opposition to the principle as to the use of stored force.

Prof. Bain also tells us (*Senses and Intellect*, ch. 4, § 18), "it is known that exercise is pleasurable only when we are expending surplus energy, and *thereby making the blood to course through the system more*

By a similar course of reasoning, we reach a kindred hypothesis as to pain, thus :—*(2) Pain is experienced whenever the physical action which determines the content is so related to the supply of nutriment that the energy involved in the reaction to the stimulus is less in amount than the energy of the stimulus.*

In general, also, we may say that :—

Pleasure and pain are primitive qualities of psychic states which are determined by the relation between activity and capacity in the organs, the activities of which are concomitants of the psychosis.

Before considering these hypotheses in detail, let us glance at some general considerations.

rapidly". That is, the use of stored force brings pleasure, because it increases the vitality of the organism. Prof. Bain's position is, on the whole, not clear to me. His principles of conservation and of stimulation, far from being complementary, are scarcely co-ordinate. The law of conservation is "teleological" (biologically speaking), deals with the present distribution of pleasures in the race, relates to the genesis of this distribution, but does not strike at the essential nature of pleasure. The law of stimulation, on the other hand, looks towards the essence of pleasure, but not satisfactorily, as we have seen, and Prof. Bain himself holds that it is not in form to cover the whole ground (*Ib.* § 23).

Zöllner, however, has stated the position with distinctness (*Kometenbuch*, i. 325, 344, 378). His consideration of the action of material points led him to belief in the universality of sentience (Empfindung), for him a much more fundamental fact of observation than is the capacity of matter for movement. From his mechanical consideration, he concluded that, in discussing the relative motion of two material points in relation to the work performed, two cases only are to be considered. Either the points move in the way determined by their resultant effective force, and their *Spannkraft* or potential energy is transformed into living force or energy of motion ; or, through the influence of a third body—an outside influence—they move in the opposed sense of force, and then energy of motion is transformed into potential energy. In conscious life this influence is exercised through two sentient (Empfindungs-) qualities—pleasure (Lust) and displeasure (Unlust). And so, he goes on to say, all performance of work of natural beings is determined through pleasure and pain, and the motions so relate themselves as to reduce to a minimum the sum of pains. This theory, put in a few words, is this :—*Pleasure is the psychic side of the transformation of potential energy into living force ; pain is the psychic side of the transformation of energy of motion into potential energy.* The formula as to pleasure is that which I have here reached, but it is a mere bald statement of hypothesis without proof ; and I may here state that my attention was not attracted to his work until long after my views were complete in my notes. The formula as to pain is entirely unsatisfactory. What I call storage of force he would claim to be painful. But the fact that this condition is often very distinctly pleasurable led to the Platonic theory, which, we have seen, made replenishment the *basis* of *pleasure*. What is fatal to this part of the theory, however, is the fact that pain goes with destruction of tissue and loss of efficiency, which is not accounted for by his statement.

The intensity of a psychosis is determined by the amount of activity within the conscious system, of certain elements relative to other activities; so, in somewhat similar manner, pleasure-pain under this theory will be seen to be determined by the amount of activity relative to the capacity of the organ involved. The likeness and unlikeness between the quality *intensity* and the qualities *pleasure-pain* is thus made clear.

The relation of energy received to energy given in any action involves one of three phases:—

Energy received equal to Energy given.
,, ,, less than ,, ,,
,, ,, greater than ,, ,,

No other relations of widest generality in this respect are possible, so that we should expect three notable phases of consciousness to correspond with these relations.

The state where energy received and given are exactly equal would *a priori* be looked for only in rare instances; on the other hand, a very close approximation to this equality would be expected in all parts of our nerve-system which are subject to constant stimulus and reaction or to relative regularity of rhythm, of stimulus and reaction where the rhythm is so short that little opportunity for storage of nutrition can occur. These are the conditions which go with the great mass of our constant systemic nerve-actions; and *a priori*, therefore, we should expect to find a corresponding general phase of consciousness, roughly acknowledged as normal, which, however, under careful analysis, would appear of doubtful existence, as a frequently recurring state. Now, just such a mental phase we do find in what is called *Indifference*, which is acknowledged to be general enough to relate to all consciousness. That the mass of systemic psychoses—and, indeed, the greater part of our mental life of no very vivid form—is indifferent is what most men will consider a truism. It is only those who are accustomed to observe the very fine *nuances* of psychic life who find themselves unwilling to rest assured in this respect, and who are disposed to believe that almost if not all consciousness is in some degree coloured with either pleasure or pain, though often in degree too small for distinct recognition.[1]

Turning to the two phases of inequality, we see additional reason why two corresponding phases of consciousness should be classed together as one pair of mental experiences, exclusive of all others; further, why, notwithstanding this kinship,

[1] Cp. Sidgwick, *Methods of Ethics*, 4th Ed., p. 125.

they should be exclusive of one another in one and the same mental content. This characteristic of pleasure and pain needs no more than mention.

We have now reached a point where consideration of the pleasures of Rest and Relief and the pains of Obstruction is possible.

In a highly organised system like man's we should naturally look for some such balancing of functioning as will insure capability in the organisation as a whole. If one distinct set of organs should become excessively active we should expect all disconnected functioning to be lessened in amount, for otherwise there would be a very constant risk of reduction of vitality to the danger-point. Such relation of the functioning in disconnected regions is, indeed, a well-recognised physiological fact, in certain cases temporarily producing what approaches to paralysis in other regions than those of excessive activity. The less marked cases are commonplaces. We have examples in the holding of our breath when our "attention" is strongly called for, in the general muscular quiet which prevails when we are mentally active. In fact, an over-activity must be isolated, as it were, to become noticeable; it is drawn into relief only by the lack of activity of organs adjacent to it. What is more, this is evidently an advantageous tendency which would be conserved by survival. For the adjacent organs being quiescent will not call for much nutriment, and a larger amount than otherwise would be possible can be drawn from the available supply without endangering the system. The general mechanism of this balance is found in the relative constancy of amount of blood in the arterial and venous systems (cp. Mosso's celebrated experiments), so that excessive activity in one direction, calling for a larger amount of blood in that direction, withdraws the normal fulness of blood from other courses, and thus renders ineffective stimuli which would ordinarily produce activity; this failure to function acting as an obstruction to the diffusion of stimuli and of activity throughout regions which would normally be affected. It must be noted, however, that the reduction of the blood-supply does not mean its cessation. There comes into play what may be called a species of *nutritive momentum*. If the blood-supply continue in its less full flow, normal activity being prevented by failure of diffused stimuli, then we have the condition which we have seen brings about storage of force. This storage of force will take place, be it noted, in those regions which are determined to activity by diffused stimuli which are in such cases cut off by the failure in

functioning of some more distinct activity. The more excessive the initial activity, the more important will be the organ which fails to react, and, therefore, the wider will be the region of inhibition through lack of normally conducted stimuli, and the wider will be the region of diffused storage of force. Now, suppose the excessive initial activity to cease: then the inhibited stimulus will again come into play; the diffused stimuli will act, and upon organs which are ready to deliver over stored energy. That is, in such conditions we shall have, in widely diffused systemic regions, activities involving the use of stored force, and the width of this use of stored force will be determined in a direct ratio by the relative intensity of the initial excessive activity. It follows also that, if activity which is normal be caused to cease artificially, every other connected organ which is active will receive a larger than normal blood-supply, and, therefore, will in some small degree show the condition in which stored force is used.

Now, let us turn to the psychological interpretation of these physiological phenomena.

Attention, whatever else it mean, surely involves loss of balance of psychic functioning. Excessive attention, whether voluntary or involuntary, whether caused from within or from without, means excessive psychic action in one direction and a consequent loss of activity in other directions. That is, it fulfils the psychic conditions which we have seen on the physiological side to involve the storage of force in diffused regions. The cessation of this excessive attention, therefore, involves, as we have seen, action in diffused regions with use of stored force. Now, here we have, it seems to me, dimly outlined what will probably be found to be an adequate explanation of the pleasures of Rest and of Relief, in terms of pleasure as determined by *activity with the use of stored force.* The reader needs but to be reminded of the diffused nature of the pleasure which, be it noted, *always* comes with rest from toil or from mental or physical strain; in other words, relief from attention voluntary or involuntary. The more pointed the attention—the more this attention tends to be painful—the wider and fuller is the feeling of delight at the relief from the excessive activity. The final step above made in considering the physiological view, when interpreted psychologically, gives us what appears to be an adequate explanation of the pleasure connected with artificial rest: the delight connected with the relief of muscular strain, which we feel when we throw ourselves into a supporting medium like water; the pleasures of

letting ourselves be led and guided in thought as in our physical environment.

As corroborative of this view, it may be noted that any hypernormal action which is truly spread over the whole system fails to give the pleasure of rest after its cessation. The painful conditions of hysteria and all other cases of general nervous activity, so-called "nervousness," give us general painfulness and exhaustion, an impossibility of rest, and no pleasure in the enforced quiet which exhaustion brings.[1]

Returning to the physiological view, what happens when a normal activity is obstructed as the result of contradictory forces or failure of stimuli, but without radical change of nutritive supply? All the connected organs will, it would seem, take up into potential form all the energy they are able to store. But after that? If the blood-currents still persist without use of the material which they carry with them for the organ, they will fail to move on in their course with normal ease; the nutritive channels will become gorged, their muscular coatings and their proper nerves forced to do abnormal work under conditions of excess and beyond the limits of storage. In the regions of fine capillary division amidst delicate tissue, as in the region of the brain, the very slightest obstruction may be expected to produce a relatively large effect in the direction of this diffused excessive work. When the obstruction is removed, however, the return to activity must involve work of organs which are well nourished, and must, therefore, result in the use of stored force.

Now, these physiological considerations would lead us to look for exactly what we find, *viz.*, pain of a diffused kind resulting from the obstruction of a normal activity or of any flow of activity: the well-known pain of obstruction, of hindered activity. They also lead us to look for pleasure of a widely-diffused kind in connexion with removal of obstructions and return to normal activity, and this we clearly do find. I shall not stop to illustrate this, for we shall find frequent occasion to recur to it from time to time in what follows. It is worth while, however, to note here that the wide regions of activity involved in these phases of pleasure in rest and pain in obstruction will render these states in general unlocalisable and disconnected from clear

[1] Oftentimes through the enjoyment of rest we may still feel the rhythmic throb of lessened pain from the part which has lately been doing such over-service, and this helps to show that the rest-pleasure is in different parts from those in which the active pain had appeared.

and distinct contents. It is this which leads to the somewhat popular division of pleasures and pains into acute and massive; for the latter comes into prominence rather through the summation of a large number of elements of low degree than by any special fulness in any direction.

It becomes evident now why it is that we practically take cognisance of five phases as to pleasure and pain, although, in fact, the five are reducible to three. We have:—

(1*a*) The pleasures of activity involving the use of stored force in the organ determining the content.

(1*b*) The pleasures of relief, of rest, which are reducible to (1*a*); but which depend upon activities apart from the content which had been emphatic before the relief or rest.

(2) The state of indifference.

(3*a*) The pains of hypernormal activity.

(3*b*) The pains of obstruction, reducible to (3*a*), in a manner similar to that shown above for pleasures of rest and relief. As we shall presently see, phases (1*b*) and (3*b*) need not be taken into account when we come to trace the laws above stated; and this, I think, justifies the digression we have made.

In bringing this article to a close, I wish to emphasise the fact that I find the greatest interest in this theory because it corroborates the position elsewhere defended, to which I have more than once recurred, *viz.*, that Pleasure and Pain are to be classified as general qualities which *may* come into consciousness with any content. I have argued (MIND No. 56) on purely psychological grounds, from an examination of the positions directly and indirectly expressed by thinkers, that Pleasure-pain cannot be classed with Sensation, nor with Emotion, nor with Intellect, nor with Will, but from the evidence before us must be thought of as bearing relations to all these classes of mental phenomena. This, our psycho-physical theory, would tell us also; for a form of consciousness which is determined by relations which govern all nervous activity clearly cannot be classed with some special mode of this activity, but must be related to all modes in which consciousness presents itself. I further argued that there are three positions which can be taken from a psychological standpoint:—(1) Pleasure-pain modes may be the fundamental—the original—elements, the basis of all psychic life from which all else of consciousness may be held to arise by development or transformation. This I found to be not upheld by evidence, and the present view would show that conditions so general as those which are the basis of pleasure-pain could not by differentiation, limitation, or combination

develop the conditions of consciousness as we know it. (2) Another position which can be taken was shown to be this: that pleasure and pain are phenomena *sui generis*, expressive of the action of the soul apart from all cognition but brought into existence by all kinds of presentation. This widely-accepted and authoritative view I failed to accept for many reasons, and we see under this theory no reason why we should fall back upon the notion of a kind of mind-activity to appreciate pleasure-pain other than that by which all the rest of mental life is grasped. Intensity, attention (inclusive of inattention, as Dr. J. Ward has it), are general qualities which *must* belong to *all* psychoses. Pleasure, pain, or indifference, as viewed from this psycho-physic standpoint, are qualities one of which must, and in general any one of which *may*, belong to each psychosis. There seems no reason why we should need to postulate a different soul-aspect to take account of these phenomena. (3) On the other hand, there is every reason to judge that all the psychological facts will be covered by the view which I have just expressed, and to which we are forced, it appears to me, by both psychological and psycho-physical argument.

I must now turn to a closer examination of the psycho-physical theory already broached, which has gained new interest from the correspondence just noted. I do so, however, knowing full well the danger which lies in the expression of theory which is not subjected to the test of refined experiment. No one can look over the ruins of complex theories, which in the past have been reared up to account for the physical basis of the operations of mental life, without feeling that our conceptions of the nervous basis of consciousness will be subject to radical change as time gives us more exact data. Whilst, therefore, I have above expressed, and am willing further to express, my notion of the basis of pleasure-pain in terms of the conceptions which our time holds with fair clearness, I do not feel certain that later on much of what I say may not appear as erroneous in form. I shall be satisfied if I am able to bring my readers to believe that the physical concomitants of pleasure-pain phenomena are to be found in general qualities common to all processes which are at the basis of our conscious life; and that this is corroborated by introspective analysis of pleasures and pains.

(To be concluded.)

I.—SCHOPENHAUER'S CRITICISM OF KANT.

By William Caldwell.

[illegible] I wish to attempt in this paper is to sift out anything [illegible]ay seem to be valuable in Schopenhauer' scriticism of [illegible]antian philosophy. It is matter of common agreement [illegible]e place of a post-Kantian philosopher in the history [illegible]osophy may be more or less determined by his attitude [illegible]s Kant, but my object here is less to explain Schopen- through his opinions on Kant than Kantism through [illegible]nhauer, although it is difficult in seeking to do even [illegible]ch to forget that Schopenhauer claimed to be Kant's only true successor in philosophy.

It is important to remember that Schopenhauer's first philosophical essay appeared (1813) only seven years after Hegel's *Phaenomenologie des Geistes*, and his chief work (*Die Welt als Wille, &c.*, 1819) one year after Hegel had begun his influential lectures at Berlin. Schopenhauer, in fact, was born just a little too late to have actually felt the fever of the philosophical agitation which fell between 1795, the year of the appearance of Fichte's *Wissenschaftslehre*, and 1804, when Hegel diverged from Fichte and Schelling into a line of thought of his own, ending in the publication of his *Phaenomenologie*. His first instructor in philosophy was G. E. Schulze, the sceptical critic of Kant, from whom, perhaps, he may have partly imbibed that somewhat superficial view of the Kantian philosophy prevalent among its earliest critics and upholders as mainly a new species of Idealism with an inconsequent Dogmatism in the theory of the Thing-in-itself; and his first formal introduction to the speculative movement of the first decade of this century was through the lectures of Fichte, which he heard when he was twenty-three years of age at Berlin in 1811—the *Wissenschaftslehre* appearing to him, as he wickedly put it, "Wissenschaftsleere," and Hegel's philosophy "a monstrous application of the ontological proof". This is more than enough to create in many minds a profound initial prejudice against Schopenhauer; but when for some years there has been an interest in the other of the two nineteenth-century philosophers who stand out in a sense from the wide stream of thought whose flood was Hegel's system—I mean Herbart

—it is not unnatural to seek to turn up the theoretic side of the roots of Schopenhauer's philosophy.

1. Schopenhauer was half made by Kant; the web of his philosophy is through and through Kantism, and again and again throughout his writings do we find such distinctively Kantian topics as the Thing-in-itself, Knowledge *a priori*, Idealism, Noumenal, Freedom, &c., discussed *in extenso* as integral parts of his own system. He has written, further, an explicit "Criticism of the Kantian Philosophy," as at once an appendix and necessary introduction to his chief work; and in the *Parerga and Paralipomena* we find a concise and eminently readable section called *Noch Einige Erläuterungen zur Kantischen Philosophie.* His point of departure in considering Kant's work is, in a word, the first part of Kant's *K. d. r. V.*, the "Æsthetic"; and he prefers to get access to Kant through the first edition of the *K. d. r. V.*, where Kant's Idealism is stated more unreservedly and more at a stroke than in the second edition. It is his conviction, he says, to which he was forced after years of repeated study of Kant, that Kant's only real discovery was that Space and Time were known by us *a priori;* and that, gratified by this, he wished to pursue the same vein of thought further, his love of architectural symmetry affording him the clue. The only element of value Schopenhauer finds in the "Analytic" is the principle of Causality, of which he thinks Kant might have given a much simpler account; all else is to him mere confusion and superfluity. The "Dialectic" represented to him the negative side of the Critical Philosophy, which he accepts as a perfectly conclusive piece of work, although he does not believe that the antinomies exhibit a natural dialectic of the reason, or that the three ideas of Kant are at all on the same level; here too, also, he thought Kant might have proved his case much more simply. With these views we are not surprised to hear Schopenhauer calling the *Prolegomena* the most beautiful and comprehensible of all Kant's writings. In Ethics he believes Kant to have rendered the immortal service of showing, in "quite a special way" (that is, by his attribution of a noumenal freedom to man, compensating for his phenomenal necessary determination), "that the kingdom of virtue is not of this world," although the *K. d. prakt. V.* is only an application to Ethics of the principles already reached in the sphere of the Pure Reason. The *K. d. Urtheilskraft* he finds to contain the characteristic defect of Kant's whole Philosophy—the starting from indirect

instead of direct knowledge; in this case, the starting from the Judgment of the Beautiful instead of from the perception of the same. Lastly, the criticism of the Teleological Judgment only shows what the *K. d. r. V.* already showed—to wit, the subjectivity of what we may call the ontological categories: Teleology commits the egregious error of first treating the world of things as a world of things-in-themselves and then of applying categories (which are subjective) to their determination.

Schopenhauer's Æsthetic has its roots in Plato; Plato's doctrine of Ideas constitutes the other half of Schopenhauer's philosophy—the woof, in fact, of which Kant's theory of the forms and matter of Knowledge may be said to constitute the web. His criticism, therefore, of the first half of Kant's *K. d. Urtheilskraft*, in so far as it may be regarded as an outcome of his Platonism, does not concern me here. His criticism of the *K. d. prakt. V.* is too directly connected with his own philosophy to be entered upon summarily. I proceed, therefore, to unfold critically Schopenhauer's general characterisation of the subject-matter of Kant's philosophy, and shall thereafter examine in its light, in order, the "Æsthetic," the "Analytic," the "Dialectic," and the chief discovery of the *K. d. r. V.*

2. The chief tendency of the Kantian philosophy, according to Schopenhauer, is to establish "the total diversity of the real and the ideal". The Ideal, Schopenhauer explains,[1] is the "visible, spatial appearance with the qualities that are perceived on it; the Real, on the contrary, is the thing-in-and-for-itself, independent of its being presented in the head of another or of itself". Kant's greatest service is to have separated the phenomenal from the thing-in-itself by proving that between us and things there always stands the intellect. Kant's Copernican discovery is aptly hit off by Schopenhauer in the words:[2] "Before Kant we were in Time; now Time is in us," and so on. It is obvious from this that Schopenhauer accepts the negative consequences of Kant's philosophy as well as the positive; we cannot know the thing-in-itself, because, as Kant showed, the laws which govern the phenomenon cannot be used to deduce and explain existence itself. Kant's defect is that he could not discover the thing-in-itself. Schopenhauer does not attempt a criticism of the notion of the thing-in-itself; the thing-in-itself is to him the reality underlying and determining the world of experience, and, as such, a real and not a hypothetical entity. He never

[1] *Werke* (1888), v. 91. [2] *Ib.* i. 502.

allows himself to speak of it in the plural, as Kant does, and so keeps consistently to a monistic point of view. The recognition of the thing-in-itself is part of Kant's great service to philosophy, and Schopenhauer denounces in the strongest terms the attempt of Fichte to set up a philosophy without the thing-in-itself, and also the attempt of Schelling in the *Identitätsphilosophie* to fuse together the Ideal and the Real after Kant's express separation of the two. "Certainly in no way," he says, "is the assumption of a thing-in-itself behind appearances, of a real kernel among so many husks, untrue; indeed, the denial of it would be absurd; only the way in which Kant introduced such a thing-in-itself and sought to reconcile it with his philosophy was faulty." The latter part of this sentence is more important for our purpose than the former. It concerns Kant's method, against which Schopenhauer directs the full force of his criticism.

A few words on this general statement of Kant's work. The tendency of Kant's philosophy is generally confessed to be twofold: to vindicate or to justify knowledge, and to limit knowledge. Schopenhauer's representation refers more to the second point than the first, and may broadly be said to be true of it: Kant did say and show that we have no knowledge of things-in-themselves, and he in a public statement repudiated the proposal of Fichte to dispense with the function of the thing-in-itself—merely limitative though it was. The Idealism of Kant, Schopenhauer ought to have remembered, was a means to an end, *viz.*, the justification of knowledge: we were enabled to predicate necessary connexion of the elements of experience, because the forms of knowledge (and also the affections of sense) were subjective. Thus it can hardly be said that Schopenhauer has stated fully the drift of Kant's philosophy. It is important, of course, to have the negative side of the *K. d. r. V.* emphasised as Schopenhauer did, because it may incline us to seek another proof of the entities which are disposed of in the "Dialectic"; only, the whole force of the negative side of the *K. d. r. V.*, and consequently of any philosophy which is built upon it, would be nullified if it could be shown that the thing-in-itself is not an integral part of the Critical Philosophy; that, in particular, the limitation of knowledge to experience can be stated in a way which does not involve the idea of a thing-in-itself. Now, I think it can be shown that the thing-in-itself is not an integral part of Kant's system in the way in which Schopenhauer thought it was—a sort of substrate bodying reality into the phenomenal world—though still an element

incidental to the system for another reason. What this other reason is seems to me to come, not out of Schopenhauer's solution of the thing-in-itself, as we might perhaps expect, but out of his criticism of the method in which he says Kant sought the thing-in-itself. I pass, then, to what Schopenhauer says about Kant's method, as more important for my present purpose than his opinions on the actual results of Kant. Only, we will remember that from the "Æsthetic" of the *K. d. r. V.* Schopenhauer learns Idealism —Subjective Idealism; it was only natural, therefore, that he should wish for a thing-in-itself whereby to pull himself out of this partial philosophy.

3. The fundamental principle of Kant's method Schopenhauer takes to be the starting from indirect reflective knowledge: Philosophy is for Kant a science *of* conceptions, while for himself it is a science *in* conceptions. By this he means that Kant found in conceptions the subject-matter of philosophy, while he found in conceptions only the form of philosophy—philosophy being a conceptualised or *generalised* statement of the matter of our knowledge. The path which was followed by Kant, starting from the point of view of abstract knowledge, to find the elements and inmost spring of intuitive knowledge also, was quite a wrong one. This is Schopenhauer's first charge against Kant; his second is that Kant had this fundamental principle of his method only very imperfectly present to his mind, and that consequently we have to arrive at it only by conjecture even after a thorough study of his philosophy. This is really more a limitation of the first charge than a withdrawal of it, as it seems at first sight to be; all students, indeed, of Kant have found it difficult to adopt definitely and persistently one line of interpretation. The importance of Schopenhauer's main charge, however, interests one more than its partial truth or error. In the preface to the first edition of the *K. d. r. V.* Kant says that it is his task to answer the question how far Reason[1] can go without the material presented and the aid furnished by experience. In the essay *Von dem Ersten Grunde des Unterschieds der Gegenden im Raume* he calls space a primal *conception* (Grundbegriff).[2] Kant, that is, does seem to think he can start from certain formal or abstract conceptions yielded to him by an abstract analysis of our representations, and his question is about the value such *abstracta* have for knowledge. In the *K. d. r V.* he talks of the categories as the pure conceptions of

[1] *Werke* (Hartenstein), ii. 67. [2] *Ib.* iii. 122.

the understanding which make knowledge possible: "If I[1] take away all thought" (through the categories), he says, "from empirical knowledge, there remains absolutely no knowledge of an object, for through mere perceptions nothing at all is thought,"—a sentence which, according to Schopenhauer, contains all Kant's errors in a nutshell. Kant accordingly looked away from perception, and, regarding knowledge from the side of abstract conceptions, hinted that an *intuitus originarius*, an intelligence which could supply from within itself the empirical matter to fill its conceptions, would be a complete explanation of knowledge; only, as he did not believe we could put ourselves at the point of view of such an intelligence, he refused to use an absolute subject in his philosophy, and declared Fichte's use of such an hypothesis to be contrary to the spirit of the Critical Philosophy. Equally little, he held, could we know an absolute object, for, from the side of perception, an object must be conditioned by our faculties, in order that we may know it. Kant was, therefore, left with the thing-in-itself. What Schopenhauer says about this is, that Kant sought the thing-in-itself—sought the ultimate explanation of experience in the abstractions of knowledge—sought to construct a philosophy out of pure conceptions, and that, just because he adopted this path of procedure, he failed to solve the problem of philosophy, in having the thing-in-itself left on his hands. The very fact that Kant was left with the thing-in-itself—with a surd, say—proved to Schopenhauer that the path of abstract reflexion was closed as the path of philosophy. Others in his day were, he thought, professing to go further on such a path ['Don't know the thing-in-itself!' says Hegel; 'on the contrary, there is nothing we know so easily!'], and Schopenhauer absolutely refused to credit any of their results with even the possibility of truth because he believed the path they followed to be "in the air". Schelling, instead of saying that he knew God by "intellectual intuition," would have done better by the public if he had said he had found a new deity; for, in truth, the deity of the post-Kantians generally is altogether different from the deity dismissed from the courts of knowledge by the *Aufklärung*.

Kant's actual problem in the *K. d. r. V.* is an answer to the inquiry whether Metaphysic as a science is possible. By Metaphysic he meant, as he tells us in the *Prolegomena*, not physical knowledge, but knowledge beyond experience, the source and principles of that knowledge never being de-

[1] *Ib.* ii. 82.

rived from experience, but from the pure understanding and the pure reason. The possible analogy of Philosophy to Mathematics was a wonted and a favourite one with Kant: each seemed to be based on conceptions; only Mathematics had the advantage of constructing its own conceptions, and of constituting itself a science. Could the mental tendency (*metaphysica naturalis*) to the creation of a body of real speculative truth be justified? To settle this question, Kant proposed to himself a preliminary *K. d. r. V.*, to find out if there were any valid pure conceptions in the mind (he had already reason to believe there were), and, if so, what they were: that is, Kant hoped to settle his ulterior question by showing the *a priori* knowledge that the mind could legitimately lay claim to. It is important, as Prof. Caird in his great book insists, and also Prof. Riehl (though of course with a very different ulterior aim) in his *Philosophischer Kriticismus*, to associate the definite problem of the *K. d. r. V.* with the general problem that lay behind it in Kant's mind. We know the solution of the *K. d. r. V.* Categorically, it is a negative one: there is no knowledge out of mere conceptions: we have, it is true, certain pure forms and conceptions in our mind, but these refer only to sense-experience, which, *at least*, we do not make (but have to wait for). The table of the pure conceptions of the understanding with its appendages, and the judgment as the key to knowledge, measure Kant's positive contribution to philosophy. The theory of the *K. d. r. V.*, as Riehl remarks, is, before all things, a logic. Schopenhauer practically understands this, because he makes out the *K. d. r. V.* to be concerned chiefly with conceptions or logical entities. He would grant, too, that the method of Kant can be traced even in the "Æsthetic," which he praises so highly.

But where do these pure conceptions come from? Conceptions, it is evident, must reside in a mind; consequently, we have Kant's doctrine of the transcendental unity of self-consciousness. Here at once a difficulty arises, and from here radiate different lines of interpretation of Kant. Is the self-consciousness Kant speaks of, the psychological subject? Then Schopenhauer, for example, tells Kant that there is experience without the functions of thought. Further, if the categories are supplied by the knowing subject to experience, they cannot be regarded, except by some artificial hypothesis or other, as *real* determinations of things. If, on the other hand, the self-consciousness is the metaphysical subject (as with Green, say), the subject in general corresponding to the object in general, then Kant has

simply shown, only in an infinitely more penetrating way than Berkeley did, that the object implies a subject. He here opened the door to the speculations of Fichte, who ran off with this transcendental subject and made it God; and to Hegel, who treats the categories as, therefore, objective *conceptions*. Besides, to say that the world, as object, implies a subject, is only a particular way of stating the general truth that one term of a relation implies the other; difference implies identity, analysis synthesis, and so on. But this kind of analysis is no real explanation of anything; it shows, it is true, how Dogmatic Realism is impossible, because one kind of dogmatism—say, a belief only in the object—can be met by a counter dogmatism, Subjective Idealism. The theorist who isolates a relation out of the concrete whole of fact may by dialectic skill show how he is compelled in thought to pass through an infinitude of other abstract relations to correct his first abstraction. In so doing, he shows, indeed, the connective and connected character of the tissue of the world, whatever that is, but he is eclipsed in speculative daring by the pantheist with his movable indifference-point (the *quatenus consideratur* of Spinoza) as the centre of the world, and his negation of all difference and relation. Hegel might have begun the *Logic* with any one category instead of Pure Being—Identity and Difference say, which Plato inclines to regard as the highest abstracta of Thought—and deduced therefrom all the others.

But, surrendering the question of the *source* of the categories, let us simply take them as the discovery of the *K. d. r. V.*, and concern ourselves more with what they are than where they come from; for in settling this we shall settle the question of origin or source. Schopenhauer, in contending against the abstract conception of Kant, helps to disentangle the veil of confusion that has been thrown over the nature of knowledge by the assimilation with Kant himself of the categories to conceptions. The main drift of his criticism, that is, strikes at the very roots of Kant's idea of Metaphysic as the Science of First Principles, and raises a question prior to Kant's most general one. Kant asked himself whether a Science out of conceptions was possible. Schopenhauer bids us pause before the question, with the prior one— What sort of knowledge we could expect to find out of, or in and through, mere conceptions—and to look at the nature of some of Kant's pure conceptions. How does his charge apply to the different main sections of the *K. d. r. V.?*

4. While we may agree with Schopenhauer that the "Æsthetic" is enough to immortalise the name of Kant, we distinctly demur to its being called Kant's only discovery. Kant professes to have been awakened from his dogmatic slumber by Hume, and, as Hume's main difficulty was in reference to Causality, it is evident that the discovery of the *a priori* character of Causality—and, in fact, of the systematic table of the Categories—must have been at least as important to Kant himself as his earlier discovery (probably as early as 1768) about Space and Time. Still, the way in which he thought of Space and Time as *a priori* wholes probably had some influence over his statement of the Categories. I seem to find in the "Æsthetic" the same tendency to abstraction, to conceptual abstraction, that strikes Schopenhauer so specially in the case of the "Analytic," with its Deduction of the Categories. The point of the "Æsthetic" is, therefore, of extreme importance. It is somewhat difficult, of course, to represent Kant's meaning. We saw above that in one place he called Space a fundamental *conception:* in the *K. d. r. V.* he tends to call it a pure perception or intuition. This vacillation is inevitable and well-grounded; for, strictly, space is neither a pure conception nor a pure perception, although it is partly conceptual and partly perceptual. Space is not a concept; for, though the space we think of is one whole—a sphere, as Kant pointed out—the space we see, on the contrary, is not *one* whole, for we cannot talk of seeing *one* anything when there is not the possibility of seeing two. Space is not a percept; for we never see space-extension apart from, say, mass-extension, coloured extension, and so on. Thus we may deny that space is a *thing* either in our heads or out of them. It is a *form*—that is, an abstract-percept; it cannot be located anywhere: by space we mean spatial extension. Kant's space is, on the whole, the space of conception, one whole sphere—that is, a fiction of thought or conception. So far from making knowledge possible, this sort of space makes it impossible; for, if we allow ourselves to make, in conception, the forms of experience into things-in-themselves or absolute entities, we introduce several universes for consideration instead of one. Schopenhauer, for example, took Kant's space as he found it, and got himself inclosed in it without being able to find, logically, a way out of it; and, truly, if space is in my head, there is no way of getting out of my head: the world is, from first to last, a *Hirn-gespenst.* The speculations of Transcendental Geometry, too, are based on the same erroneous and impossible view of space as a thing

complete in itself; they are, in fact, of a piece with dogmatical Physical Realism in general, which Kant—as his lasting contribution to the sum of human knowledge—completely destroyed. Unfortunately, Kant, in destroying Physical Realism, fell himself into the Scylla of Idealistic Realism or Dogmatic Idealism. Kant practically tells the Physical Realist that in his atoms, and his void, and so on, he is manipulating so many mental fictions: only, it is utterly erroneous to think that after Kant there existed, wherever appropriate, a metaphysical idea or conception, in place of the physical entity of the scientist. The Idealist is guilty of making abstractions just as much as the Dogmatic Realist is—and, perhaps, he is more to blame; he, too, like the Realist, peoples the world with things-in-themselves—a species of Epicurean gods, that may be safely left to enjoy the serenity of their repose beyond the *moenia mundi*. I am not here seeking to use again Locke's argument against innate or *a priori* principles, although I do think with Schopenhauer that, say, Fichte and Schelling, in interpreting Kant generally, again and again speak as if Locke had never written. I only wish to protest against the categories being taken to be conceptions or pure conceptions (which enter into experience to condition it): Kant, that is, has not described the space of real perception, but the space of abstraction—pure space, which is pure nothing.

5. It is of the "Logic" of the *K. d. r. V.* that Schopenhauer's criticism is materially and formally most radical. Let me outline his positions. He gives a different account of the functions of the soul, rejecting altogether the faculty-distinctions of Kant: he associates Kant's faculty of Understanding more with Sense and the category of Cause with the spatio-temporal or perceptual construction of the world, and holds the other eleven categories to be mere blind windows put into a scheme through Kant's love of symmetry; and, secondly, he holds Kant's account of Reason to be utterly false, and substitutes his own doctrine of the thing-in-itself for Kant's three Ideas of Reason. As to the faculty-psychology of Kant, few people, of course, will now seek to defend that. Schopenhauer did not wage war against the faculty-psychology as such, as Herbart did; still we may regard his reduction of all the faculties to manifestations of one supreme mental fact as a step in that direction, to be associated with Herbart's reduction of mental processes to *Vorstellungen* and the relations of *Vorstellungen*. [The *Four-Fold Root* and the *Lehrbuch* appeared in the same year, 1813.] Schopenhauer, for example, in the *Four-Fold Root* talks of Understanding and Reason

and Sensibility as "subjective correlates" of certain "representations". [The words appear to have been in the first edition.] Of course, he takes the ordinary licence of speaking of soul-functions under separate names. The Understanding with him is concerned, not in thinking, but solely in the spatio-temporal construction of the world as an object of Perception, and is common to man and the brutes; its chief function is not that of working the "complicated machinery" of the twelve categories, but simply of projecting and disposing the data of the senses into the causal temporo-spatial order; Causality is its only category. The faculty which thinks objects is Reason, the faculty of conceptions. One or two observations on this account of Understanding:—

(*a*) It seems of distinct advantage to have sense-experience marked off from reflective knowledge, as in Schopenhauer's rigid separation of perceptual and reflective knowledge. It is not easy to figure clearly what Schopenhauer meant by Understanding; its equivalent in the *K. d. r. V.* would probably be the Synthesis of Imagination, a schematic construction of the data of perception into an objective order. It is assigned by him to animals as well as men, because they too have a perceptual knowledge of the world, and must, therefore, be credited with the synthetic co-ordination of the data of sense which this implies. Thus he helps to bring out the fact that Kant's Synthetical Unity of Apperception is not necessarily a distinctly intellectual operation, but, in the first instance, simply a general co-ordination of the elements of sense-experience in relation to the unity of the psychological subject. One does not know whether Kant thought animals equal to the 'I think' of his Apperception, but one can hardly imagine him denying to them a perceptual knowledge, which latter is certainly possible without conceptions. The 'I think,' in short, of Reflexion is a higher mental fact than the synthetic apprehension of the data of sense or organic experience; animals, for example, certainly have the latter, but evidently not the former. The associative synthesis of their experiences common to all percipient beings is the co-ordination of the elements of an organic movement-series with the elements of sensory affection. This is what Schopenhauer at bottom meant by the spatio-temporal construction of the data of experience effected by the action of the Understanding on Sense.

(*b*) By calling this synthesis the work of the Understanding, Schopenhauer may seem to be either unduly intellectualising Perception—a thing he objects to in Kant—or to

be degrading Understanding in making it subservient to Perception. As to intellectualising Perception, he might justify his use of the word Understanding by maintaining that we have no reason for restricting it to denote merely the conscious co-ordination and segregation of the data of experience to the exclusion of the unconscious process of relation which must have preceded it; and, as to degrading Understanding, he might contend that the degree of Understanding a being has will be found to be in the end just that degree which is necessary and adequate to the performance of its life-preserving and life-furthering functions. Kant, it is true, has distinguished three aspects of his Synthesis, and his distinction is of value. In pointing out, first, the synthesis of Apprehension, which is simply the combination into one whole of the successive elements of Perception; and, secondly, the synthesis of Imagination, which is association by means of a schematic or productive act on the part of the knowing subject; and, thirdly, the intellectual synthesis of Apperception, which is unification in relation to a self-consciousness,—Kant may be held to have distinguished three stages of the development of psychical life, which may be exemplified in different percipient beings. Kantians are sometimes anxious to save their master from the apparent inconsistency of admitting an empirical synthesis (in the much-disputed example of seeing the parts of a house) to be possible apart from the functioning of the categories and the self, from the danger of allowing nature to be possible apart from intelligence: such an apprehension, however, is groundless, for the dependence of the object upon the subject does not stand or fall with the position that experience is only possible through transcendental apperception. It might be urged, of course, that the end of experience is implied in the beginning, but this is going into teleology, which I want here to avoid.

(c) Another fault in Schopenhauer's use of the word Understanding is that he does not allow in his explanation for its close connexion with what he calls Reason. In his anxiety to put Reason and Perception on two different planes of experience, he has not seen the connexion of the Reason that is latent in Sense (according to himself even) with the fully developed or conscious Reason which proceeds from first to last in and through abstract conceptions. Understanding is really a middle stage of knowing between Sense and Reason: it begins in detecting the connexions among the elements of Perception, and ends by being able to figure these connexions abstractly. Schopenhauer restricts

Understanding too closely to Sense-perception; Kant, on the contrary, to Reason. To Kant knowledge must be rational, or it is almost not worth the name of knowledge; while to Schopenhauer rational knowledge is only a very small part of experience, intuitive knowledge being a much greater part. That is, while there would seem to be degrees in the extent to which a psychological subject is able to discriminate, and effect a redistribution of, the elements constituting its experience, Kant tends to see only the upper limit of knowledge, Schopenhauer the lower. It is true that Kant in the *K. d. r. V.* says, for example, that "mere intuition does not stand in any need of the functions of thought"—categories, say—a sentence which is often explained away on the ground that Kant, overcome by the weight of the old dogmatism which he had really destroyed, occasionally 'nods'. Schopenhauer must have seen many such utterances in Kant, and so added the restricting clause to his charge. But if the categories are not to be retained for perception as "functions of *thought*" or pure conceptions, we must simply find a better name for the categories that are undoubtedly implied in Perception.

What Schopenhauer rejects, then, in the "Analytic" is the assertion that without thought Perception is impossible, and that conceptions alone make knowledge possible. He regards the Transcendental Deduction of the Categories as an attempt to find the last elements of reality in conceptions. Eleven of the categories he declares to be useless. The Principles of the Understanding he does not in so many words reject as formal or schematic principles of knowledge, and we must regard his table of Predicabilia *a priori* with the table of Metalogical Judgments as in some sense a substitute. H. Cohen in his *Kant's Theorie der Erfahrung* charges Schopenhauer with a gross misapprehension of the purpose of the Deduction, in forgetting or not seeing that what Kant really teaches is that both the *a priori* of Sense and the *a priori* of Understanding are necessary to constitute experience, and that these two things must be taken together. I cannot exactly see that Schopenhauer proceeds in the teeth of this truth; for, granting it, it is still desirable to have the *a priori* of Sense marked off from the *a priori* of Thought, and Schopenhauer's polemic against the Categories as conceptions is a negative step to the ascertainment of what the Categories really are. It is strictly not true that the 'I think' and the pure conceptions of thought are necessary to the possibility of experience. Kant is right in pointing out the synthetical unification that the subject

makes of its representations, but his logical unity is only one typical form of synthetic "conjunction of the manifold".

6. By Reason Schopenhauer means the power the mind has of forming general conceptions and of knowing by way of conception or idea, the matter for conceptions and ideas being of course derived from Perception. To say that Reason brings anything to experience that it has not already received from experience is to him simply a remnant of Medievalism which contradicts fact, and he often in this connexion speaks with approval of Locke's criticism of innate ideas and of Hume's *History of Natural Religion*. The simplicity of this is the simplicity of fact. Schopenhauer rejects altogether, therefore, Kant's conception of Reason as the faculty for seeking and knowing the unconditioned; when Kant says that Reason demands the completion of a series of conditions, Schopenhauer denies that the mind seeks anything more than the next condition—the condition of this condition—the next or the prior cause, for example. It seems too, if we reflect, that it is the Understanding which investigates the relations of the world and not the Reason. Reason is really only a second way of knowing, a power of knowing by way of idea instead of by percept. Reason is the power we have, through abstraction, of regarding the sphere of being from any one point of the perceptual field as centre. Reasoned knowledge is an abstraction from perceived knowledge, and all knowledge, as Schopenhauer says, is originally and in itself perceptive: conceptions cannot be the root of reality, for out of conceptions nothing but conceptions follow. Kant's "Dialectic," showed conclusively that from ideas we could never prove things. Schopenhauer turned then from the 'Indirect' or Reflective Method to the Direct or Perceptual Method; only, in doing so, he forgot that it is impossible to see the whole of the world, that the world can only be perceived in sections, as it were, which Reason or Abstraction can help us to make. He forgot, that is, to think of the necessary relation of Perception to Conception, and in consequence of this he afterwards made the mistake of taking that side of the world which he saw for the whole world. Although it is true that conceptions do not make Perception possible, in that the entities of conception are not real ultimate things, it is still true that through Reason we are enabled to focus Perception. I wish to follow out the consequences of the view that the validity of conceptions must be vindicated by perceptions. Kant, of course, reiterated his assertion that without perceptions conceptions are empty, but he

did not make a clean sweep of empty conceptions. The "emptiness" of the Categories is instructive.

7. The confusion in Kant's account of the elements entering into knowledge is, I imagine, Schopenhauer's reason for holding that Kant can only have had the fundamental principle of his method imperfectly present to his mind. It is really almost impossible, as Schopenhauer remarks, to say what Kant regarded as the object of experience. In the *K. d. r. V.* ideas of sense, objects, things-in-themselves, sensations, conceptions, schemata, all play the *rôle* of objects of the mind. The Categories, too, are defined in many ways. At one place they are called "the mere rules of the synthesis of that which empirical apprehension has given *a priori*"; at another they are said to "differ in no respect from the formal acts of the understanding in judging"; and as a mean between these two we have the most generally cited definition of them as "notions of objects generally by which the sense elements of these objects are conceived to be determined in respect of one or more of the various logical functions of judgment". The chief cause of this confusion, or "principle of accommodation"—to use Schelling's phrase—seems to me to be the fact that Kant could not freely state what Perception was because he had the idea of finding, as Schopenhauer notices, the last elements of intuitive knowledge, of all knowledge, in the *abstracta* of thought; having this idea, he had always the secret fear of wrecking himself with his Copernican find of the categories in the "given," as he called it, which he felt got on somehow quite well without pure conceptions. Fichte and Schelling inherited from Kant this dread of making Metaphysic dependent upon an assumption, and so of lapsing back into Dogmatic Realism; and, accordingly, we find both seeking to constitute for it a first principle which was above all proof, and which developed difference out of itself. But such transcendent explanations of experience were only invented to overcome an unreal difficulty, for "the given," if properly understood, is no difficulty nor reproach to Metaphysic; it really represents an abstraction incident to philosophical reflexion, and not an element in, or a feature of, *naïve* or uncritical consciousness, for such consciousness is an undifferentiated sense of existence in which the distinction of subject and object does not exist. The only assumption that philosophy requires to make is that there is a world to explain, if this can be called an assumption. The attempt that Spinoza made to prove the existence of his universe, although the most splendid piece

of speculative daring in the history of philosophy, is a superfluity, and an artificial difficulty.

Kant's question, Schopenhauer rightly says, is the question of conceptions. True, the problem of the *K. d. r. V.* comes to be the relation of conceptions to perceptions and *vice versâ*, and Kant more than once insists that the two are mutually related; yet, as his theory of knowledge is a logic, he tends to find the *rationale* of knowledge in pure conceptions. His whole difficulty in relating the elements of knowledge to each other arose from the fact that he in his thought likened the categories to conceptions through want of an explicit and persistent recognition of the nature of conceptions. [Kant, as is said, rarely defined his working terminology.] If the categories are conceptions they must be explained as coming from experience, the source of all conceptions. The categories are indeed necessary to experience, but to experience *in general*—each stage, that is, of experience is determined by the relevant categories; but the lower stages of experience, for example, are not determined by the categories of higher stages—perception by the categories of reflexion, for example—although the higher stages embrace and transcend the lower.

Schopenhauer himself classifies the Categories according to the planes or stages of experience they characterise: the perceptual, the mathematical, the logical and the ethical in order. As in Logic we say that the subjects of our propositions exist as real in the continuum in which we happen to be at the time moving, so the categories are real, each in its appropriate sphere. We must not seek for *Cause* in the world of perception, for example; we can never *see* a cause which is wholly cause and not partly effect and also wholly distinct from its own effect; equally vain would it be to look there for Freedom or Identity, although people have done both (as when court-ladies sought for two precisely similar flowers on hearing of Leibniz' principle of the identity of indiscernibles). Prof. Laurie somewhere calls Cause a *dialectic percept*, and the expression is a very good one, for it brings out the fact that we can only see or perceive Cause by an effort of abstraction. Schopenhauer has taught us that the reality of any element of knowledge can only be vindicated by its being shown to be perceptual or perceptible, although in his polemic against the Abstract Method he forgets that certain elements in things and in knowledge can only be seen or perceived by abstraction. There is something, for example, ideal and something real about every category; Cause, say, is at once a principle of the Under-

standing and really the energy or movement in the world of things. In one sense, of course, no category represents a reality or thing either in my head or out of it; there is no such a thing anywhere as mere space, or mere cause, or mere negation. The categories are, in short, all abstractions, but not conceptions or notions. Conceptions are a particular kind of abstractions, and so are categories: to conceptions *material* entities correspond, but to categories only relations or forms. As abstractions, the categories are indeed ideal, mental; and we may, therefore, say they are supplied by the mind to experience in general, if we remember not to substantiate them in this handing over. A category represents a formal aspect of experience which we may think of apart (we may have *conceptions of* the categories): as to real existence, a category is as real as a *law* of nature; both are *abstract-percepts*, which we may *choose* by an act of abstract attention to *see*. Knowledge consists in the detection of relations existing between the different planes or sections of the perceptual continuum, the difference in perceived things being that some are immediately and others only mediately perceived. The psychologist recognises the fact that all knowledge is in its first and last aspects, as Schopenhauer says, Perception, by his conception of various mental *objectiva* and by his calling all mental entities *presentations;* even sensations by being apperceived become and are presentations or perceptions. In thinking the categories out, Kant's mind must have been influenced by the Scholastic conception of *Essence*, as Hegel's afterwards was when he talked of thinking, by the might of thought, through the hard husk of things.

8. The true reason of Schopenhauer's revolt from the method of Conceptions is to be found, it seems to me, in the difficulties in which he felt himself involved by the theory of Subjective Idealism. That Kant distinguished the Ideal from the Real (see above) means to Schopenhauer that Kant's working doctrine was Subjective Idealism. I will not here seek to inquire whether a good case could be made for Schopenhauer's interpretation. The first step towards Subjective Idealism was made, he says, by Berkeley, a philosopher to whom Kant does scant justice, and Berkeley's Idealism Schopenhauer takes as established matter of philosophy. The second and final step towards Subjective Idealism was taken by Kant, who proved that the forms of knowledge were subjective, and this step must be associated with the first. Schopenhauer again and again states and professes the doctrine of Subjective Idealism

with a remarkable evenness of candour and conviction. "The world is my idea," is the opening announcement of his chief work. "If I am not, there is no longer Time," he elsewhere says; and he consistently employs the expressions "objects" and "ideas of the subject" as convertible. Locke, Berkeley, Kant, and himself, he held, represented the stages in the development of a single thought; it having been reserved for himself to give the proper proof of the ideality of the world by showing it to be through and through, *i.e.*, formally and materially, a creation of the *brain* (!). He does not consider the inconsistency of holding that the brain as an "object" is of course an "idea" of the subject, and yet at the same time the *cause* of experience and the world. We may draw the line here, and refuse to proceed over a logical contradiction, but the exigency of the system demands our allowing it to lapse. It is partly atoned for or explained by the fact that he takes "The world is my idea" to be true of every percipient, and lets the question of the origin of the world slide into the darkness of the thing-in-itself. But his difficulty is, and this is the chief point: granting that the world is my *Vorstellung*, how ever am I to get out of *Vorstellung* or subjectivity? Philosophy, he says—all philosophy from Hinduism to his own times—is a search for the Thing-in-itself. We may agree to this, if it means that philosophy seeks the unification of experience. He then tells Kant that from the idea nothing but the idea follows (he here makes an inclusive sweep of all *ideas:* his own "perceptions" or "objects" and Kant's ideas—all are ideas, *Vorstellungen*), and that, in short, the path of Reflexion or Knowledge is closed as the path of philosophy. The obvious thing to say about the "Dialectic" of Kant is that, of course, it is true, but it would have been much more natural to seek to account for conceptions out of perceptions, and perceptions out of—something else—the Thing-in-itself, say—than perceptions or objects *out of* conceptions. Now, Schopenhauer was perfectly right in saying that knowledge is originally and in itself perception, but he ought to have kept more true to this ruling of his own. Had he done so, he would not have maintained that the world is only my idea, for Perception does not teach us that. When Berkeley "sends a man to his senses" to find that matter is really a plexus of ideas, he forgets that he is asking the man to test and to satisfy a philosophical hypothesis, and that Perception, in fact, never is equal to the distinction between idea and thing, for it does not break up the unity which the world is to intuition.

In Intuition or Perception we never ask ourselves what the data of experience *mean* (*e.g.*, whether they are 'things' or 'affections' in us, or signs, &c.), for the very forcible reason that we do not, in the simplest form of Perception, define ourselves as over against the world; we are in Perception ourselves part of the great order which is to Perception a sphere whose centre is anywhere. A healthy cow perceives just as well as a philosopher—better, possibly, because it has had no difficulties about the Ego and the Non-Ego.

The Thing-in-itself is the shadow cast by the Reflective or Abstracting Understanding; it represents a structural paralogism or 'idol' of the intellect: it seems to mean generally either the pseudo-reality we attach to an abstract-percept, such as Space, or Cause, or Identity, or the world which we leave for the moment out of count in focusing attention exclusively on one of its elements. Both meanings of the word can be exemplified in both Kant and Schopenhauer. Both, for example, treat Space as one indivisible whole; and both require a Thing-in-itself to determine or account for what Kant called the "given": Kant, for the reason that we do not originate the particular element in experience; Schopenhauer, because he felt the unsatisfactory character of the teaching of Subjective Idealism. As, in the latter case, with both philosophers the Thing-in-itself is primarily invented to get rid of the difficulty bred of a belief in an abstraction or unreality—'the given,' to wit, in the shape of *mere* sense-idea or sense-affection—and as, in the former, the Thing-in-itself is a pure mental fiction, we may safely deny that there is any such thing in reality. V. Hartmann's expression for the Thing-in-itself in Kant hits off perfectly what it really is in general; he calls it a *negativen Grenzbegriff*—a negative limiting conception.[1] The abstraction made by the Subjective Idealist in his false account of Perception has wrought the direst havoc in Philosophy; his account is based on the untrue and absurd supposition that Perception gives with one hand what it takes away with the other; that it says at once: 'Here I give you *fact*,' and 'No, it is *only* idea'. The truth is that Perception discloses from first to last fact, and that any 'ideas' or fictions or negations we find in sense-perception represent a subjective equation or subjective abstraction. This may seem an unguarded statement in view of the fact that Perception sometimes is illusory. Illusion is an extremely difficult factor and an extremely important factor

[1] *Studien und Aufsätze*, 556.

to cope with, but I think it will be found that nature corrects her own illusions by natural process—that is, the fact, if illusive, does not destroy for the mind the objectivity and reality of Perception. "All knowledge is in itself and originally Perception"; Science rests on the objective validity of Perception.

Schopenhauer has helped to bring out—and indeed, by his own failures, has helped to illustrate—the extravagancies of the method of Indirect Reflexion upon experience when relied on more or less exclusively to the neglect or discredit of the method of Direct Perception. In his mirror (which is by no means always clear) we see the paralogisms incidental to an imperfect analysis or recognition of the nature of conceptions, and in himself we can see the paralogisms incidental to an imperfect analysis or recognition of the nature of perceptions. Thus he has helped to bring Philosophy into the daylight of Realism, by bringing out the realistic elements in the Kantian doctrine. In the *rôle* he assigns to Understanding and Reason—a somewhat subordinate one, it may seem, but not really so—of interpreting the data of perceptual experience, one finds a valuable corrective to the Fichte-Schellingian theories of a primary and absolute knowledge resident in pure reason. Many questions cannot be answered owing to the radical error that lies in them as questions: the Thing-in-itself question is one of these.

I have had to leave many extremely interesting aspects of Schopenhauer's criticism out of sight. One would have liked to look carefully through the holes he has drilled into the "blind-windows" on the Category-list, but that would mean a separate study.

IV.—DISCUSSION.

ON THE ORIGIN OF MUSIC.

I. By Richard Wallaschek.

It is a well-known fact, established by the observations of travellers and investigators, that the one essential feature in primitive music is rhythm, melody being a matter of accident. We do not meet with a single instance among savages of a fixed melody--fixed at least according to musical principles; melodic cadences, where they occur, serve only as signals, or as a convenient accompaniment to certain activities, such as rowing, towing, or fighting. Even among savage tribes where some songs have in course of time become traditional, words and melody are varied after a few repetitions by different singers, or even by the same performer. Whereas again some tribes show an aptitude for imitating European tunes, they are never effectively influenced thereby to the extent of either developing their native musical productions, where these (as amongst the Hottentots) are limited to dance-music, or of creating any where none exist (as among the tribes in Tierra del Fuego). Rhythm, taken in a general sense to include 'keeping in time,' is the essence of music, in its simplest form as well as in the most skilfully elaborated fugues of modern composers. To recall a tune the rhythm must be revived first, and the melody will easily be recalled. The latter may be suggested by the former, but never *vice versâ*. Completely to understand a musical work ceases to be difficult when once its rhythmical arrangement is mastered; and it is through rhythmical performance and rhythmical susceptibility that musical effects are produced and perceived. From these several data I conclude that the origin of music must be sought in a rhythmical impulse in man. I do not mean that musical effects consist in rhythmical movement as such; innumerable ideas and feelings become associated with it, and give rise to those emotions which we on hearing it experience.

If it be asked whence the sense of rhythm arises, I answer, from the general appetite for exercise. That this appetite recurs in rhythmical form is due to sociological as well as psychological conditions. On the one hand, there is the social character of primitive music, compelling a number of performers to act in concert. On the other, our perception of time-relations involves a process of intellection, the importance of which has been pointed out by Mr. Sully, and which I cannot better describe than in his own words:—"This perception of successive or time-

ordered impressions is something more than a succession of impressions or perceptions. It involves a subsequent act of reflexion, by means of which the mind is able at the same time to comprehend them as a whole."[1] Now every product which is of the intellect and appeals to the intellect must contain all the particulars which follow from reflexion and render it possible. And since music is produced not merely as an auditory impression and expression, but also in order to evoke reflexion, it must contain the qualities above alluded to, *viz.*, time-order and rhythm. It is of the nature of mental progress to proceed to the comprehension of all that is apprehended, and to produce much on purpose to be comprehended; this purpose is attained by the use of time-order and rhythm. Such being the grounds for the expression of our mental constructions in a rhythmical form—a form which will be of greater importance the fewer our means of otherwise comprehending the details of those constructions—the question still remains to be answered, Whence does the general appetite for exercise arise? Mr. Herbert Spencer's theory affords the most valid explanation. It is the surplus vigour in more highly evolved organisms, exceeding what is required for immediate needs, in which play of all kinds takes its rise; manifesting itself by way of imitation or repetition of all those efforts and exertions which were essential to the maintenance of life (*e.g.*, the war-dance). And it has, moreover, been demonstrated by ethnological research that to bring about bodily fatigue through the manifestation of energy in a perpetually-increasing ratio up to the last degree of lassitude is an indispensable feature of primitive art.[2]

It may be objected that a mere craving for rhythm is far from amounting to a desire for tones and melody, and that, therefore, the question, as to what gives rise to our discriminative pleasure in musical intervals, is not yet satisfactorily answered. The

[1] *Outlines of Psychology*, p. 206.

[2] It is curious, that whereas Mr. Spencer and all the other English writers who treat of the so-called *Spieltrieb* (play-impulse), *e.g.*, Messrs. Sully and Grant Allen, regard it as an entirely German idea, in Germany it has always been ascribed to English theorists. It did indeed find embodiment in the writings of Schiller, but was, in my opinion, smothered rather than brought to light by the philosophical jargon which he learned from Kant, and by his own obscure metaphysical style. He ran into a great labyrinth of metaphysic, whence nobody can find the way out,—nor could the author himself, I should suppose. Hence the theory remained unheeded, though committed to writing nearly a century ago. Put in our times into scientific form by Mr. Herbert Spencer, it has nothing in common with its earlier presentment beyond the name, the grounds being quite different. But just as Schiller was inspired by Pope and Addison in his *Anmuth und Würde* and *Briefe über die ästhetische Erziehung des Menschen*, he likewise found approximations to the *Spieltrieb* theory in Home's *Elements of Criticism*, ch. v. (see Zimmermann's *Geschichte der Aesthetik*).

origin of the significance of intervals and our appreciation of them is indeed one of the utmost importance for our present purpose. A simple example, however, will teach us that rhythm and sonant rhythm coincide. Try to play first on a stretched, and then on an unstretched, drum or kettledrum, such as savages use, and you will see that rhythm brings us in and by itself to sound and certain tones, owing to the fact that the rhythmical movement becomes much more distinct and better-marked on the former, than on the latter, instrument. Hence it came about that men did not stop at simply striking on deer-skins as they used to do in ancient times, but proceeded to stretch them first, *i.e.*, to perform on drums and kettledrums. The same implicit principle prompted the custom, in grammar-schools on the continent, of teaching the rhythms of classic poetry in a kind of chant, not of course for musical purposes, but simply because the rhythms were rendered much more distinct when intoned. Perhaps no other illustration shows so well how a rhythmical design, in and by itself, brings us to musical tones, and, by way of these, to the appreciation of intervals and melody.

I not only affirm that rhythm is one of the main constituents, and creates the principal effect, in primitive music as also in our modern music, dance-tunes or what not—a remark frequently made by composers: I also maintain that rhythm teaches us the appreciation of intervals, both as to their order and grouping. An interval as such has no musical value for us without rhythmical order in time. Even animals recognise and utter intervals, but cannot make any intelligent use of them, because they do not understand rhythmical arrangement. One of the most characteristic signs of a musical nature is, that persons so endowed very often cannot hear any noise periodically repeated without imagining it to be accompanied by music; besides which they are much fonder than unmusical persons of rhythmical movements. Again, rhythm of itself incites us to further rhythmical development, as is shown in an example given by Mr. Grant Allen (*Physiological Æsthetics*, p. 114):—"As we walk along the road, we sometimes amuse ourselves by touching every post, treading upon every second flag, or striking our stick against every lamp-post. If for any reason we are obliged to leave out one of the series, or to desist from want of the objects in question, a slight blank is felt, which is very faintly unpleasant. The nervous system has put itself into a position of expectancy, and is ready for the appropriate discharge at the right moment. If the opportunity for the discharge is wanting, the gathered energy has to dissipate itself by other channels, which involves a certain amount of conflict and waste." Hence arises the craving for a rhythmical succession of bars and periods. Their recurrence and aggregate arrangement is much more marked and can be more easily understood by a repetition of the same tones or tunes over the same rhythmical periods; moreover, in order to give a more

pronounced tone to a rhythmical period, higher notes are used, lower notes marking a decreasing movement, and so on, till we have all the elements of a complete melody. Thus we get accustomed to the interval as such, and appreciate it more than the rhythm as such, the former being the more impressive experience. That the development of a melody from detached notes is due in the first instance to a certain rhythmical movement is an obvious fact. Detached notes do not as such prompt to further development or variety. Rhythm is the initiative force which leads us on to any arrangement of notes whatever, although it must not be forgotten that the specific form assumed in any such arrangement depends a good deal upon our contingent ideas and feelings. The power exerted over us by any rhythmical movement lies in its being adjusted to the form in which ideas and feelings succeed each other in our mind. A composer may give us a direct imitation of some movement of external nature (a thunderstorm, a waterfall, or the like); but the fact holds good none the less, that the effect produced in us even in such cases is due to our recognising, in the intensity, strength, velocity, increase and decrease of the movements, forms corresponding to the flow of our ideas and feelings, though the nature of that flow depends entirely on each individual psychical organism.

I am aware that I put forward nothing new in the assertion, that we easily connect an ascending or descending modulation with an increase or decrease of sound, but I have always had the impression that even those writers who appreciate the importance of rhythm in music do not consider this fact a sufficient explanation to account for modulation, or for the pleasure we experience in musical intervals, but go afield for a supplementary fact. This they find in the current modulations of speech, or in the intervals used by birds in their 'songs,' by the perception of which men learned the use of, and came to take pleasure in, intervals. I for my part think that Mr. Spencer's general theory of the origin of art is entirely adequate to explain the origin of music, and that to adduce speech and its modulations is not only unnecessary, but absolutely untenable. Men do not come to music by way of tones, but they come to tones and tunes by way of the rhythmical impulse.

We are accustomed to speak of 'music' in the animal kingdom, and especially among birds, but in so doing we do not use the word in its proper meaning. The emission of sounds such as we hear in nature is by no means real music, and this is borne out by the fact that it does not develop correlatively with the evolution of the higher classes of animals. It might indeed be possible with some little trouble to show, as Darwin did, that there is something akin to singing even amongst mammalia, but it will never be possible to show that this so-called singing of mammalia, if from a musical point of view it be worthy of notice at all, is really developed from birds' singing, with human

song as its highest outcome. I am not competent to settle the question whether there is or not an hereditary transmission of acquired modifications, such as Darwin in his theory of music accepts and Prof. Weismann denies; but, even if all Darwin's hypotheses were correct, it would not follow that human music and dances were the developed outcome of birds' songs and of dancing among animals, for the reason that in a primitive stage of society the former have in many cases nothing to do with love.[1]

It is possible that male-birds of handsomer plumage are preferred by the hen-birds, but may we thence infer that birds understand painting? Similarly some male-birds may be preferred by the hens for the quality of their song; can we, therefore, say that they understand music? Is the bird's song a composition? Certainly not. But by music we always understand a musical composition, or at least its reproduction, that is to say, a consciously designed and constructed work of art. I am aware that there is no difference in kind between the bird's instinct and the human design; there is only a difference of degree, as between mind and instinct generally, but this degree must nevertheless be attained before we are justified in speaking of any group of sounds as music. Birds have no conscious intention of charming by the display of magnificent hues in such and such a manner, nor is it within their power to choose their colours any more than it is to change their songs, so as to make them correspond with their feelings. A corresponding change may actually have taken place in many cases, but are we sure that it was intended? Can we take it as a consciously-arranged composition?

On the other hand, however, it may be asked whether the hen-birds, in distinguishing between different singers, do not show that they appreciate their singing to at least a limited degree. But even if it be admitted that they really appreciate *singing*, their discriminative taste for bird-minstrelsy could as little be called a feeling for music as their distinguishing one bird's plumage from another amounts to a feeling for painting. No doubt, every bird hears sounds and distinguishes the call of one bird among that of others, but it is one thing to hear a sound, another to recognise it as a melody. We usually say the hen-bird chooses the best singer, but which is the best singer? The audience in a concert-room do not agree which singer is the best, while we pretend to know exactly which bird sings the best and to think that the hen-bird knows it too and is certainly of the same opinion as ourselves! Not one of us knows whether the hens' choice among the cock-birds' singing is awarded on musical

[1] Cp. the corresponding passages in Mr. Spencer's last essay on this subject (MIND, October, 1890), and C. Stumpf in the *Vierteljahrsschrift für Musikwissenschaft*, 1885, "Musikpsychologie in England".

grounds, whether other motives do not prompt them to follow the males, and whether the coincidence between their action and a certain quality of song be only a matter of chance. To me it appears that birds are lacking in that act of reflexion by which they might comprehend the time-ordered melody as a whole, and distinguish it from a certain number of incoherent notes. Birds do not keep time unless they reproduce invariably and mechanically the same short refrain at the same pitch, and I fear that in speaking of bird-music we impute too much of human psychological interest both to their declarations of love and to their appreciation of the so-called 'song'.

As to that, some writers would seem to have a special mission to interpret the language of birds. Mr. Berg, for instance, assures us that, strictly speaking, all kinds of animals equipped with a sound-apparatus, including frogs and crickets, "must be considered as musical creatures, since they experience the same feelings in their concerts as music excites in us, and many of them pursue in music the same object as ourselves". I must confess I envy Mr. Berg his ability of extracting correct information from frogs, crickets, and the like, as to their musical attainments, and I envy too the frog himself for his admirable knowledge of what causes pleasure in human beings, without which he would never have been able to compare his own feelings with ours, or to disclose that he takes the same pleasure in croaking as we in singing; we poor men sometimes do not know ourselves of what our pleasure in art consists. In my opinion the simple beating of a drum contains more 'music' than all the sounds uttered by birds, and we owe our musical faculty to the time-sense rather than to our sense of hearing. Of course, in following the utterances of the animal kingdom down to a very primitive stage, we must go back as far as the bird's song, but we are not more or less justified in discerning in it the origin of music, than we should be in saying that all animals equipped with sound-apparatus speak English, the English language being just as peculiar an order of utterance—of which the peculiar origin is still *sub judice* —as is human music. The origin of music is not to be sought in the fact that birds call 'cuckoo,' cluck 'go-back,' or imitate our speech, but in our connecting certain things and ideas with certain sounds. It is true some animals do so too, but why then do we not at once call birds little poets, who sing the praises of universal love as they flit in the forest from bough to bough? We know now-a-days that even some kinds of fishes produce sounds: why are not they considered musical? There must be as great a difference between these sounds and our music as there is between a barking dog and a poet—a difference perhaps only of degree, but yet of so many degrees as to render us unable to call both by the same name, and this for the same reasons as

prevent us from calling a fish an ape, although in the scale of animals the latter is evolved from the former.

In former days we had a much simpler, yet similar theory, without heredity and development, according to which men learned music by direct imitation of the singing of birds. From an ethnological point of view, a counter-proof to this theory is not far to seek, namely, that we have never heard of an imitation of the singing of birds among savages, or even an appreciation of it; wherefore, I presume, men do not acknowledge the song of birds as music before they are themselves well advanced in the art.

Some time ago Prof. Weismann, in an essay full of interesting and important matter, declared that music arose "as a secondary effect of our sense of hearing not originally intended in nature". It is perhaps a verbal contention to question whether we are justified in speaking of intention and of secondary effects in nature, but I do not think that our musical faculty is an effect of our sense of hearing, because the perception of particular tones and tunes plays a very low part, if any, in primitive music—certainly a much lower part than the rhythmical arrangement. It is perhaps for this reason, as Prof. Weismann endeavoured to show, that the sense of hearing in human beings was well developed before musical practice began, and was not developed by way of the latter.[1] I entirely agree with Prof. Weismann in his assertion that the same sense of hearing produces different musical effects according as there are in human beings different qualities of "soul". My conclusion, however, is that, in an inquiry into the origin of music, it is these peculiar qualities of "soul" which have to be examined, and not a certain condition of the sense of hearing. And this quality is the time-sense with the faculty of discerning in the strength, velocity, increase, and decrease of sounds produced by our "surplus vigour," forms corresponding to the flow of our feelings and ideas.

Another theory, according to which music arose from speech, seems to me to explain a correct observation in a wrong direction. We can see, in almost all the examples furnished by ethnology, that music is the expression of emotion. There is no doubt that emotion is one, though only one, of the sources of human language. Consequently we speak in faster or slower, louder or softer, higher or deeper, tones, and with more or less variety of accent, for the same reasons as would influence us in musical expression. And since through speech the ideas which influence the form of our expression generally (to wit, its intensity, strength, rapidity and modulation) acquire a definite verbal setting, we learn to connect certain ideas with certain forms of expression. By reason of this connexion between our ideas and feelings and some form of

[1] Brehm in his *Thierleben* and Mr. Sully in an essay on "Animal Music" (*Cornhill Magazine*, 1879, ii. 605) came to the same conclusion.

expression we come more easily to associate them with any kind of music.

We need not push this theory too far. Music will certainly develop this form of expression, than which it has no other, in a different manner from speech, the only media of which are tones and their modulation, though the accompanying mode of diction is not to be neglected: it renders possible the composition of a poem, and qualifies music as a higher intellectual pleasure than any simple auditory impression could be. The characteristic feature, in my opinion, of Mr. Spencer's speech-theory is, that he first showed an intimate physiological connexion between all our emotions and their expression, leading us to discover vestiges of music in declamation and conversely. This it is which distinguishes it from all other speech-theories of the last century, which assumed the simple intuition of language ready-made (a notion long since refuted in the speech-controversy of that century, notably by Langere; see Jullien, *La musique et la philosophie du XVIIIme siècle*).

Whereas Mr. Spencer, however, seems to think that musical modulation originates in the modulations of speech, I maintain that it arises directly from the rhythmical impulse. It is true that modulation in the developed art of music is very often influenced by the modulations of speech, and it is remarkable that this influence occurs to a greater extent in modern music than in the older classical school (take Berlioz, Wagner, Beethoven in the 9th symphony, and compare, say, with Palestrina and Handel). Herein may lie the source of that unanimity which I have noticed between the most zealous opponents and adherents of the speech-theory on the one point, *viz.*, that vestiges of declamation are to be met with in music, and that we ought, on the strength of this advance, to finish a controversy nearly a century old. That it has become customary for our composers to have regard to the inflexions of the speaking voice does indubitably facilitate the connexion of ideas and feelings with music, even if it be purely instrumental; but the fact has nothing to do with the question of the origin of music. For myself, I doubt that such is the origin; admitting, none the less, the present reciprocity of influence in both music and speech, and that for several reasons.

1. We find even in the most primitive state of culture a sort of recitative, side by side both with a kind of music, in which the rhythm alone plays a leading part, and with songs, the words of which are perfectly meaningless or at least cannot be understood by the tribe in question. In such circumstances it is obviously impossible for the musical modulations to have taken rise from the spoken modulations, since there is no genuine speech in the case at all. The Hottentots, *e.g.*, not only borrow from others songs ready-made which they themselves do not understand, but they also themselves compose songs with a meaningless chorus. Primitive

vocal music reveals in many cases no connexion with language, but is simply a succession of musical sounds sung by the voice. This stage of music is found among savages neither earlier nor later than, but simultaneously with, the recitative.

2. Speech expressed in song does not develop at the same rate as speech itself; on the contrary, the intellectual importance of singing declines with the higher development of language. Examples of a word changing its meaning when spoken with a different vocal inflexion are only to be met with in primitive language. Mr. Spencer in his recent essay says:—"It may be that music uses distinct tones and speech indistinct, but the former might be developed from the latter". If this were so, we should inevitably discern some traces of this development in its continual advance from a primitive stage up to perfectly artistic songs, just as we are able to follow a parallel development from the movements of a primitive, up to those of a modern, dancer.

3. Music is an expression of emotion, speech the expression of thought. If we assume that music originates in, and is developed from, speech, we must also assume that emotion is developed from thought. It may be that in the adult human organism particular emotions do arise in this way, but it is not true of emotions generally. Moreover, many cases of aphasia prove that an expression cannot be emotional and intellectual at the same time, the one kind of expression arising in and spreading through different parts of the brain and nervous system from those occupied by the other. It may be, however, that in a very primitive stage of mental development thought and emotion have not yet become clearly differentiated. To illustrate my point, let us compare singing and speaking with drawing and writing. Each member of these pairs constitutes at the present day a distinct order of activities, though at one time each pair wrought with the same materials, writing being picture-drawing, just as singing and speaking may have used the same vocal sounds. Each, being a specifically different mode of expression, developed its material in course of time in a very diverse manner, till musical tones and spoken sounds came to be as distinct one from the other as a picture from a letter. But no one would say, nor indeed has any one said, that drawing originated in writing, or writing in drawing. I think then that music and speech did not arise the one from the other, but that both arose from (or together with) an identical primitive stage in one of their common elements. Hence it happens that in inquiring into the origin of music we necessarily come into contact with primitive language, and in inquiring into the origin of speech we come into contact with primitive music, or, more correctly speaking, with the corresponding sounds. Primitive human utterance, using sound-metaphors and onomatopœia in order to make itself intelligible, may resemble primitive musical tones; nevertheless an early separation of distinct tones and indistinct sounds seems to

have taken place, not as a transition from the one as prior to the other as succeeding, but as a divergence from a primitive state which is, strictly speaking, neither of the two. Sometimes, however, a kind of unity remains even through later periods of civilisation, as ethnology can show (*e.g.*, in Dahomey, Siam, China, Japan, Tierra del Fuego); and, bearing this in mind, we cannot say, as has been alleged by so many opponents of the speech-theory, that there is no singing in speech in the world at all. For this reason I should not agree with Gurney, who said "that the six or eight wordless notes, which a child of four will croon over to itself with never-ceasing delight, are, both in themselves and in their emotional effect, as truly and absolutely remote from speech as is the *Eroica* symphony". They would be so indeed if they were purely musical notes, but they are in fact neither music nor speech. I have never heard an infant really sing—that is to say, invent (though it may repeat) a song—before it could speak, while its crying is unfortunately a very familiar experience; and it is just this power of uttering no matter what that enables it in course of time to evolve a faculty both of singing and speaking. Gurney's further remark—that music is a separate order, an adjustment of proportional elements, of which speech knows nothing—is inapplicable to all its elements, since music has one element in common with speech, *viz.*, sound-production. Look at the results of ethnological research. It is as difficult to tell whether a primitive utterance is sufficiently developed to be called musical as it is to know whether it can properly be called language or not. This is perhaps the reason why Darwin and Mr. Spencer do not agree on the question as to which comes first, music or language. "Spencer," said Darwin, "comes to an exactly opposite conclusion to that at which I have arrived. He concludes, as Diderot did formerly, that the cadences used in emotional speech afford the foundation from which music has been developed, whilst I conclude that musical notes and rhythm were first acquired by the male or female progenitors of mankind for the sake of charming the opposite sex. Thus musical notes became firmly" [I should rather say, possibly] "associated with some of the strongest passions an animal is capable of feeling." I think Darwin's mistake in the sentence here quoted lies in his speaking of "music," instead of musical *sounds*, *i.e.*, sounds which come to be used later in music. Music proper is a faculty which both in the child and in the savage always manifests itself later than speech.

There are besides some minor points in the speech-theory requiring perhaps further explanation. My experience has not shown me that people who have a singing element in their speaking voice are more musical than others. And even in their case it would be impossible as a rule to put down any given spoken accents in notes. Again, these accents are not objectively fixed, nor is speech an abstract organon separated from all

concrete life. Everyone utters the same idea in his own fashion, and speech is only the sensuously perceptible part of a great psychical process, differing in different individuals at different times. It may, therefore, be no easy matter merely to imitate the modulations of speech, nor would it aid us in being mutually more intelligible (though it might afford us a good deal of guess-work in ideas), nor could music (I mean the art as such) ever evolve a new language, because musical forms—that is to say, the intensity, strength, velocity, increase and decrease of tones—can be understood only in a relative sense. Hence it has very often been said that music represents only the typical forms of feeling. Strictly speaking, however, it is impossible to represent the type as such. Representation is individualisation. On the other hand, it is equally impossible to express by musical methods all our particular feelings. Can we evade this dilemma? I think so. The musician is situated similarly to the anatomist, who gets a small piece of bone and is able to tell exactly whether it is a human bone or not. It is not of course the human type as such that is represented by the bone, and no one can tell to which individual the bone belonged, yet we recognise in this small fraction of a particular man the human type. So I too am not wrong, I hope, in asserting that music reproduces such a small fraction of the forms both of external and internal nature that we can recognise in it at best the type, and not the specific details. Music can rouse feeling, but it cannot cause *what* it is we feel, this being the outcome of each individual psychical organism.[1] Coincidence between the feelings of composer and audience can be only a fortuitous, not a necessary, result, because of the relative nature of musical forms. Nor is it essential, from an artistic point of view, that they should completely coincide, since in the cultivation and exercise of music a man's intention is not so much to make himself intelligible as to inspire his fellowmen.

Correlative to the decline in the importance of vocal inflexion as an intellectual factor in human communication, as language undergoes higher development, is the suggestive power of specific ideas implanted in highly-developed music by feelings and associations, differing in different psychical organisms. And from those vague associations, suggested in a primitive stage by rhythmical movements, are developed the higher pleasures of melody.

I am well aware that celebrated composers and speculative "philosophers" have been opposed to the importance of rhythm in music, but I am also aware that our best possessions are not the theories, but the works of art, bequeathed us by the former, and that our best philosophy is not of the speculative order.

[1] In asserting this rule, some musical forms of a stereotyped character, such as a funeral march or a waltz, cannot be taken into account.

Whatever enthusiastic musicians or "philosophers" may have said of a music of the future without rhythm, I always feel inclined to interpret their prophecies poetically rather than scientifically, and believe that what Gurney said on the other side will remain true:—"Wherever rhythm is perceived with enjoyment, there is implied a nascent stimulation of the dance-instinct, and, however much music 'ought to be' independent of time, I am afraid that in listening to it, with our present physical organisms, we shall retain a prejudice for rhythmical phenomena in preference to unrhythmical noumena".

II. By Prof. James McKeen Cattell.

Mr. Spencer's paper on *The Origin of Music*, contributed to Mind No. 60, calls up a subject of widespread interest. It is likely that most readers of the paper will agree with Mr. Spencer in holding that music had its origin in vocal sounds expressing emotions of all kinds, and not solely in vocal sounds prompted by amatory feelings. It may be suggested that the theories of Darwin and Mr. Spencer, like so much in the writings of those who have developed the doctrine of evolution, describe what probably took place, rather than explain why it was necessary that it should have taken place. The theory that art had its origin in overflowing energy is important, but it in no wise explains why art should have followed its historical course of development, nor why we judge one work of art to be good, another bad. It is, however, the part of Mr. Spencer's paper concerned with harmony to which I wish to take exception. Mr. Spencer writes:—

> "It goes without saying that there must be otherwise accounted for that relatively modern element in musical effect which has now almost outgrown in importance the other elements—I mean harmony. This cannot be affiliated on the natural language of emotion; since, in such language limited to successive tones, there cannot originate the effects wrought by simultaneous tones. Dependent as harmony is on relations among rates of aerial pulses, its primary basis is purely mechanical; and its secondary basis lies in the compound vibrations which certain combinations of mechanical rhythms cause in the auditory apparatus. The resulting pleasure must, therefore, be due to nervous excitations of kinds which, by their congruity, exalt one another; and thus generate a larger volume of agreeable sensation."

It is strange that the great advocate of the theory of evolution should hold that harmony, which has been gradually developed from melody, should owe its emotional effects to an entirely different origin. Mr. Spencer's conclusion amounts to saying that harmony gives pleasure because it is pleasant. The researches of Helmholtz, indicated by Mr. Spencer,[1] have thrown much

[1] Not quite correctly; since the "secondary basis" does not consist of vibrations formed in the ear, as was formerly supposed, but of vibrations in the air exactly like the other "aerial pulses".

light on the physical basis of music. Helmholtz has shown that those combinations of tones which are considered the most harmonious are the freest from "beats". Beats are undoubtedly disagreeable. We do not know why this is the case, but we have the analogies of flickering lights and tickling, and may suppose that these rhythms are obstructive or hurtful to bodily and mental life. The pleasure of harmony is not explained, however, by showing that it avoids disagreeable sounds. Wundt has laid stress on the fact that harmonious tones are most nearly related to each other through their overtones and difference-tones, and holds that we derive pleasure from detecting such hidden resemblances. This is doubtless a fact, but it does not go far toward explaining the great emotional effects of music.

Mr. Spencer seems to hold that nothing in a single tone corresponds to a combination of tones, and that the intervals used in music are not found in nature. The facts are, however, different. Rameau and d'Alembert knew, more than a hundred years ago, that the overtones (harmonics) given by a single tone are in harmony with each other, and Helmholtz has shown that all difference in the timbre (quality) of sounds rests on the number and strength of the overtones present. Thus, if the string of a violin be plucked, it will vibrate, and will give a tone whose pitch corresponds to rate of vibration. But, in addition to vibrating as a whole, the string will vibrate in two equal parts; each of these parts will vibrate twice as fast as the whole string, and give a tone an octave higher than the fundamental tone. The string will also vibrate in 3, 4, 5, 6, &c., parts, and will give a series of tones corresponding to these rates of vibration. If the string give c as its fundamental tone, in addition to this c we can hear c^1, g^1, c^2, e^2, g^2, $b\flat^2$ c^3, &c. In a single tone are included, therefore, octaves, fifths, major and minor thirds, and, indeed, all the intervals and chords used in music. Thus music is not, as is commonly supposed, a creation of the imagination, freer than the other arts from a physical basis, but is rather a discovery and a development. All the combinations of music are latent in the sounds of nature, and the history of music bears witness to the gradual adoption of such as are more remote. Thus, after the octave, the fifth was used, then the major and later the minor third, and so on to the combinations of modern music. In like manner, harmony has been developed from melody, and the complex orchestration of Wagner's operas from the reed and lyre. The gradual perfecting of the scales used in music was simply the discovery of the relations present in every tone of the human voice.

As we have seen, all differences in the timbre of tones depend on what overtones are present, and on their relative loudness. A tuning-fork does not have harmonious overtones, and it gives a thin and empty sound. A flute has only the first overtone emphasised, and we consider its tone sweet, but thin and cloying.

In the trumpet the higher overtones discordant with each other are prominent. The violin possesses the complete series of overtones, and the player can emphasise such as he chooses, hence it is an instrument unrivalled in its power of expression. The difference in the vowel sounds depends on the overtones present. Thus, *u* (as *u* in *flute*) is poor, *i* (as *ea* in *beat*) rich in overtones. The difference in voices—and nothing is more characteristic than the voice, even in ordinary speech—rests on the overtones present. As the voice changes in expression, different overtones are emphasised, and when it is swayed by emotion its quality still depends on the strengthening or weakening of certain overtones.

The theory I suggest to account for the immense emotional effects of music is, that music expresses the emotion of the human voice. And this, not in any mystical manner, but simply by using and developing those combinations of tones which the voice uses when moved by sorrow and joy, despair and exultation.[1]

Owing to reasons purely physical and in harmony with the other bodily expressions of the emotions, certain overtones are strengthened, and certain others weakened, according to the emotion which moves the mind. Even in the lower animals, we are greatly stirred by the joy in the song of birds, or the pain in the cry of a hurt dog. In man it is the voice which, before all else, expresses and excites emotion. We cannot fill the voice with feeling as we will, but the great musician, having the passion and the art, can combine tones and instruments so as to express his emotion. Music is thus exactly in harmony with the plastic arts. It copies, selects, combines, idealises, and uses the power of association. Art does not surpass nature, but it makes the best of nature a part of daily life.

[1] These overtones might be determined for the voice in real or simulated emotion; it is likely that we should thus find an interpretation of major and minor keys, &c. Such an experiment will be crucial for this theory. In the meanwhile I suggest: (1) the tones of the human voice are those used in instrumental music, the overtones of the lower instrumental tones and the overtones of the voice making the correspondence complete; (2) the power of detecting discord in musical instruments is greatest within the compass of the voice; (3) the voice in singing is more expressive than any musical instrument; and (4) instruments like the piano, which cannot express true or varied intervals, do not have much emotional effect. I do not, of course, want to ignore other sources of pleasure in music, least of all rhythm, which, in a popular audience, is probably the most potent. Indeed, I should like to suggest that in the combination of melody and harmony, which are stirring, with rhythm, which is soothing, we get an emotional effect analogous to that produced by stimulant and narcotic drugs—alcohol, tobacco, opium, &c.

THE COEFFICIENT OF EXTERNAL REALITY.

By Prof. J. Mark Baldwin.

Among the many interesting points raised by recent discussions in Mind on the Cognition of Physical Reality is that of what I venture to call the *Coefficient* of External Reality. By coefficient I mean the something which attaches to some presentations in virtue of which we attribute reality to them; while others, not having the coefficient, are discredited. The diametrically opposed solution of this question of coefficient by Mr. Stout on one hand and Dr. Pikler on the other is remarked by the Editor in his review of the latter in No. 61.

The opposite solutions are these—and the opposition runs through the history of opinion on this topic. To one class of writers, the coefficient of the reality of an image is its independence of the will (so Spencer, Stout, the Editor, and innumerable others); to another class, the coefficient is subjection to the will (so Bain, Pikler). And it is hard at first sight to see how such a flat contradiction can arise between such careful thinkers. My own reflexion on the general psychology of belief has led me to a point of view from which I am able to see the probable cause of this apparent difference of opinion.

Suppose we make a distinction between a memory-coefficient of reality and a sensational coefficient: by the latter, meaning the criterion of present sensational reality; and by the former, the something about a memory which leads us to believe it represents a real experience, *i.e.*, is not a mere creature of fancy. A moment's consideration will lead us to see that these two kinds of reality differ in their relation to the will. Certainly, a present sensible reality is not under control of my will; it is independent, and if my coefficient is to be discovered in the relation of the presentation to my voluntary life this must be its expression, and I go over to the class of writers who find the psychological basis of external reality in sensations of resistance. But when we come to enquire into the memory-coefficient, asking the question, what character it is in a memory-image which testifies to its being a memory of reality, the tables seem to be turned. Without stopping to examine other views, I hold that that image is a true memory which we are able *to get again as a sensation* by repeating the series of voluntary muscular sensations which were associated with it in its first experience. In other words, if it represent a real former experience, it will have with it muscular (resistance) associates which will make it possible for me to change it into a sensational experience again *at my will.* The memory-coefficient, therefore, is subjection to will in the sense indicated. If this be true, the answer given to the main question of belief in objective reality will depend upon whether we look at it from the side of present reality or of reality as remembered.

Further, this memory-coefficient of external reality must be carefully distinguished from the coefficient of memory itself; the latter being the feeling that an image has been in consciousness before, *i.e.*, recognition, or sense of familiarity. I may recognise an image as a true memory, but yet not give it objective reality. The difference between recognition or memory-reality and the memory of external reality, is this: the former can be brought up by appropriate associates at will, but these associates and the resulting memory have not the sensational coefficient after we get them; that is, they are not individually independent of the will. While, as is said above, the getting again of a remembered reality in the external world is by a series of sensational (resistance) associates, and the resulting experience when reached is a sensation independent of the will. In Hume's phrase, "an opinion or belief is a lively idea related to or associated with a present *impression*". A true memory, in short, is an image which I can get at will by a train of memory-associates, and which, when got, is further subject to my will; a memory of external reality, on the contrary, is an image which I can get at will by a train of sensational associates, and which, when got, is not subject to my will. Of the two, the former is important for the psychology of belief in general; the latter alone for the theory of belief in external objects.

These three factors in belief appear clearly in this example:— An infant, after certain muscular movements, enjoys the contents of his food-bottle, *i.e.*, sensational coefficient of external reality. Again, his bottle lies beside him, he reproduces his enjoyment by voluntarily repeating the muscular series which before led up to the enjoyment, *i.e.*, memory-coefficient of external reality. Being satisfied and drowsy, the bottle-image comes up in consciousness by association with the memories of the muscular movements, the real movements not being made nor the enjoyment reached, *i.e.*, coefficient of memory. Once more, the bottle-image comes up, he makes the muscular movements, but fails to get the satisfaction, *i.e.*, memory-coefficient is not supported by sensational coefficient, and illusion results.

As illustrating the two coefficients of external reality and their confusion, Dr. Pikler in MIND, xv. 396, brings against Mr. Stout's view, that interruptions of regularity determine objective belief, the objection that such interruptions occur in the subjective order but are not, as interruptions and quite involuntary, part in the objective (sensational) order; overlooking the alternative that such images usually bring associates which throw them into the memory-order. And Mr. Stout seems quite right in saying that when there are no such associates they *are* put in the sensational order (MIND, xv. 549). In arguing that reality finds its criterion in subjection to the will, I think both Prof. Bain and Dr. Pikler have in mind the memory-coefficient—the question put by Mill:—"What is the difference between think-

ing of a reality and representing to ourselves an imaginary picture?"

What could be clearer evidence that Prof. Bain refers to the possibility of getting reality voluntarily than this quotation:—"Our belief in the externality of the causes of our sensations means that certain actions of ours will *bring the sensations into play or modify them in a known manner*"? Mr. Stout quotes this, and adds (MIND, xv. 33):—"I utterly fail to see how dependence on my own activity can mean the same as dependence on something other than myself"; which simply means that Mr. Stout "utterly fails" to see an essential side of the external-reality problem. Prof. Bain in this quotation is recognising the memory-coefficient, and thus getting a basis for persistence in external objects; and I think Prof. Bain is not open to the charge of having entirely overlooked the sensational coefficient. What Mr. Stout calls Prof. Bain's "obvious paradox" is seen, from what I have already said, not to be a paradox, but a complexity in our belief in objective existence.[1]

In Mill there is almost exclusive appeal to the memory-coefficient,[2] and hence the confusion lurking in his "permanent possibility of sensation". It is perfectly true, as Mr. Stout says, that a possibility is nothing until it is brought to the test of sensation; but it is equally true, as Dr. Pikler says in substance, that a possibility (of getting) sensation may carry belief without such a sensational test. In the former case we ask for the sensational coefficient to the exclusion of the other, and in the latter case we rest on memory to interpret the "possibility" apart from present sensation. In short, Mill's formula may be modified to be true to either coefficient, but not to both; while as it stands it is true to neither, but favours the memory-construction. To express the sensational coefficient, it should read *permanent necessity*[3] *of certain sensations;* and to express the memory-coefficient, it should read *permanent possibility of getting for myself certain sensations.* But for an adequate theory either aspect is insufficient, because it neglects the other.

[1] For Prof. Bain's clear recognition of both aspects, see *Emotions and Will*, 3rd ed., pp. 578-81.

[2] See especially pp. 234-238 of his *Exam. of Hamilton* (American Edition). The appeal becomes exclusive in Dr. Pikler's book, *The Psychology of the Belief in Objective Existence.*

[3] The element of necessity (resistance) in certain sensations must be added to enable Mill to meet the ordinary common-sense argument that (in his words) "all mankind unless they really believed in matter would not have turned aside to save themselves from running against a post" (*loc. cit.* p. 244): for mankind do not turn aside except when the possibility is of a certain kind of sensations. And he fails to meet the objection to his formula (really the same one) that it gives mankind no means of positively avoiding the post, *i.e.*, by voluntarily bringing about other realities.

We might call the sensational coefficient (independence of will) the *primary* criterion of belief in external objects, and the memory-coefficient (voluntary getting of sensations) the *secondary* criterion. And an adequate formula, to do justice to both, would have to run somewhat like this:—Belief in external reality is a *feeling of the necessary character of sensations of resistance and of my ability to get such sensations again at any time.*

I believe, however, that a simpler formula may be suggested: a formula which will hold that belief in general is a feeling attaching exclusively to objectives, its criterion or coefficient being lack of subjection to the will; that belief in external reality is its very earliest exhibition; and that the belief of which subjection to the will is the criterion is a derived feeling anticipatory of sensational confirmation—just as the memory of which it is the accompaniment is derived and referable for its material to the sensational process. But my present object is only to make clear the issue, and to point out the waste of effort that results from failure to distinguish carefully the two points of view. Among recent writers I think no one else does such justice to both sides of the problem as does Lipps.[1]

[1] *Grundtatsachen des Seelenlebens*, ch. xvii., particularly pp. 397 ff.

V.—CRITICAL NOTICES.

The Principles of Psychology. By WILLIAM JAMES, Professor of Psychology in Harvard University. 2 vols. New York: Hy. Holt & Co.; London: Macmillan & Co., 1890. Pp. xii., 689; vi., 704.

Prof. James, a true American for all his European sympathies, has done 'the big thing'. Hitherto the world has known him as a writer of brilliant psychological essays, in which careful reading, acute insight, and daring originality were alike conspicuous. He has now issued an elaborate treatise, in which all (or nearly all) the prominent questions in modern psychology are handled with the old combination of qualities. Large and elaborate, however, as is this brace of stout volumes, it can hardly be described as a carefully organised *system* of psychology after the type of such works as those of Bain and Spencer in England, or of Volkmann and Wundt in Germany. And here seems the best place to say a word or two about the structure of the book. Prof. James frankly tells us that a good number of his chapters are reprints, with more or less considerable alterations, of papers sent to this and other journals. Now, to adapt a series of papers, some of which have appeared in popular magazines, to the exigencies of a scientific text-book does not strike one as an easy task, and our author has not altogether escaped the risks of the undertaking. In truth, an intelligent reader might have guessed that the book had formed itself in the way described. Thus the want of a rigorous sequence, of that progressive development which is essential to the exposition of a body of scientific doctrine, strikes the eye at a first glance. The order of subjects is not always clear, the experienced eye spies ominous gaps; and then the absence of any division into Books or Parts in a treatise of 1400 pages—for this is precisely what the two volumes reach—still further diminishes at least the appearance of systematic arrangement. As this is very near fault-finding, I may as well add that the detailed treatment is not altogether what one looks for in a weighty treatise. Prof. James has the turn for apt telling epithet and vivid imaginative colouring which characterised G. H. Lewes's philosophical writings. Nobody would be less disposed than the present writer to resent the introduction into psychology of a little imagination, or, for that matter, a spice of humour. Our author, moreover, as his readers know, is particularly happy in his illustrations and his verbal inventions. All this is something to be grateful for, and yet one is disposed to wish that there were now and again somewhat less of it. The vividness of impression obtained by a smart descriptive epithet may be purchased too dearly if its

dazzling effect blurs the sharp boundaries of scientific thought. Again, Prof. James is exhilaratingly vigorous in his controversial moods, which are by no means infrequent. He sets aside the crudities of a reigning English philosopher with all the delightful *insouciance*, the naïve egoism, of a boy. For this ingredient of rollicking defiance of the authorities, again, the reader of many dull psychologies may well be thankful, and yet he may wish here and there for just a *soupçon* of the old spirit which has prompted mankind at all stages of culture to pay reverence to ancestors. One other point and our fault-finding will be over. A writer so well qualified by experience, scientific training, and reading, as well as by the possession of the most facile of pens, to write his own book would have done well not to let others contribute quite so much to his pages. The appearance of several pages at a stretch from works so accessible as Dr. Carpenter's *Mental Physiology* strikes one as an interpolation into a masterly and original treatise of an unworthy element of 'padding'. Such quotations may have had their justification in the original articles written for the general reader, but they, together with other popular features, might with advantage have been ruthlessly cut down in the treatise. Perhaps, however, all this will strike Prof. James as excessive stickling for conformity to conventional pattern. What seem faults to the exacting critic may after all turn out a boon to the student who is not enamoured of psychology and will only be too grateful to anybody who enlivens the subject for him. There is no doubt that our author has done this. Long and elaborate as are some of the chapters, they afford for the most part excellent reading. It is certainly not a conventional text-book: it presupposes a previous mastering of conventional text-books; and it promises to those who have accomplished this part of their course a delightful transition of consciousness, in which will be no room for any idea of text-book, examiner, or other unpleasant subject of the kind.

In spite of the absence of continuity of structure the two volumes are, in a measure, unified by being the product of one and the same strongly-stamped individual mind. Prof. James is before everything else original—energetically, aggressively original. He must see things with his own eyes, and woe to the man who comes between those eyes and their object. This, I take it, is the deepest source of charm in all his writings. The freshness, the force, the wholesome contempt for other men's work when this takes on the aspect of mere lumber, all this is admirable. Our author has the magical power, given to the very few, of recreating his subject. The much-tormented human mind loses its dull, worn look in his hands and becomes alive again. This, again, is partly due to a rare combination of analytical and imaginative power, the gift of showing us the constituent factors without destroying the concrete wholeness and shapeliness. Here, too, the author reminds one of Lewes, whose mind was

at once scientific and literary, and who had a salutary dread of the destructiveness of analysis when pushed *à outrance*. The treatment throughout the volumes illustrates this happy combination of distinct gifts. The writer is acute and penetrative in his analysis, discriminating what others confuse, as when he refuses to accept two successive ideas representing the same object as "the same state of mind". Sometimes, indeed, he seems to carry his love of fine distinction to the point of excess. Yet he does not rest in such abstract distinctions. It is after all the warm, palpitating mind that he loves, and his subtlest analysis, like the young sculptor's study of the anatomy of the human body, has for its sole end a fuller and more faithful presentment of the living organ. Nothing is finer in this work, nothing more useful, than the attack on what may be called ultra-atomism in psychology, the doctrine that the living flow of consciousness can be cut up into sharply distinguished 'states' or constituent 'elements'. This attack may, perhaps, be regarded as the psychological counterpart of Lewes's assault on the superstition of the central nerve-cell, the notion that the single ganglionic cell yields its own distinct element of consciousness. It is this wise observance of the limits of psychological analysis, this jealous regard for the rights of concrete fact, which justifies to so large an extent the quite unique style of the exposition. Prof. James has managed to write a large, and on the whole admirably clear treatise on psychology, with the least possible aid from the technical language of the subject. Nothing more unlike the artificial-looking psychologies of Herbart and his school can be found than the contents of these volumes. On the other hand, the language employed is strikingly original. Many new distinctions are baptised here, but always with native, homely and communicative names. The wealth of simile, of happy turn of phrase to a new use, the frequent tracking out of psychological principle into the haunts of the vulgar and the pages of general literature, all this makes the book delightful and captivating. Our author may be sure of one thing: his book will live, if only through the charm of its literary expression, when most text-books lie dusty and forgotten.

Coming now to the characteristics of the psychologising here illustrated, we find, as might be expected, that Prof. James does not lend himself to an easy process of classificatory 'ticketing'. In the main he may be described, perhaps, as eminently positive and empirical in the respectable sense of this term. His theorising is from first to last grounded on fact. He is a generous consumer of all the psychological wares that the new physiological and psycho-physical factories can turn out. The same keen scent for fact leads him to welcome the now well-known observations of Frenchmen and others in the domain of hypnotism. He would probably be taken by the unwary reader for a physiological psychologist *pur sang*, so full and so constant

is the reference to neural processes. Yet with this positivism, this instinct for careful observation of fact and rigorous verification of theory, there goes a no less distinct streak of mysticism. Hard and praiseworthy as is our author's effort to bar himself within the limits of psychology proper, he cannot forbear taking a peep now and again into the metaphysical region. He has, as he admits in a deliciously humorous way (i. 180), a sneaking fondness for the old-fashioned "soul" in psychology, and, as we shall see, he is not going to let any new-fangled ideas of psychophysical parallelism displace it. The mysticism appears more plainly in the whole doctrine of effort and free-will which, as the author would probably be the first to allow, is as much an æsthetic or ethic postulate as a psychological assertion. Yet this Lotze-like leaning to a teleological view of things is on the whole kept in praiseworthy subjection to properly scientific aims, and a man must have the smallness of a pedant to object to the occasional intrusion of a hint of large vistas beyond. That our author is more than a remarkably able psychologist, that he has something of the many-sidedness of all great minds, is a fact which should excite nothing but admiration.

With this general account of the book and its characters, we may glance at some of the more important matters it deals with. A detailed reference to all points of interest is of course out of the question, and an effort will be made to select what is new, characteristic, and promises to have permanent objective value.

A short, far too short, chapter on the "Scope of Psychology" leads on to an excellent *résumé* of the principal facts respecting the "Functions of the Brain". The chapter is illustrated by some good drawings. Yet one cannot help feeling as if this were a chapter torn out of a physiological work. If an account of nervous structures is to appear in a text-book of general, as distinguished from *physiological*, psychology at all, it should be complete in the sense of taking in the neuro-muscular apparatus. But any account of so complicated a set of structures adequate for descriptive purpose requires, as we know, considerable space, and the question arises whether it is not paying more respect to physiology as well as being fairer to the student to send him to one of those detailed expositions which can so easily be got in this age of text-books and encyclopedias. In the present state of neurological science the psychologist would, I think, do well to avoid everything like a descriptive account of the nervous system, and to confine himself to a bare summary of the more important results of anatomical and physiological research so far as these have a plain bearing on the understanding of psychical processes, a bearing which he means afterwards to illustrate. The chapter on the Functions of the Brain is followed by one on "Some General Conditions of Brain-Activity," in which there is a pretty complete account of reaction-time. The chapter as a whole, however, has a certain jerkiness, and the section "Phosphorus

and Thought" looks as if it were thrown in as a sensational diversion. A chapter on "Habit," highly anecdotal, and perhaps the least original in the work, leads on to a rejection, much in the manner of Lewes, of the "Automaton-theory". Here we get some smart hitting of the gentlemen of the laboratory, one of whom once said in the author's hearing:—'It is high time for scientific men to protest against the recognition of any such thing as consciousness in scientific investigation'. Clever as is the argument here, it does not strike me as altogether convincing. It is no doubt quite pertinent to remind the modern anatomist that he cannot at the same time object to psychic causation as unintelligible and dogmatise "about *material* causation, as if Hume, Kant and Lotze had never been born". That is, he must be either "impartially *naïf* or impartially critical". Yet an idealist-anatomist of the Huxley type might retort that the non-recognition of a causal efficiency in psychical states is in his case at least the result not of any lingering attachment to an occult nexus, but of the acceptance of positive scientific facts. In other words, he might say:—'What you psychologists call a mental process I regard as a psycho-physical, and the highest generalisations of physical science tell me that in every material process each phase is adequately determined by previous phases. I do not want your consciousness as agent since I have in the stream of molecular action which is never interrupted all the needed conditions for explaining a purely material process such as you allow muscular contraction to be.' It is more to the point to suggest *how* consciousness can assist in the case. This Prof. James accordingly tries to do. Consciousness, he tells us, is needed in order to modify the monotony of action of the brain-machine by "loading its dice" so to speak. This is to say that the diversity of brain-action is not explicable by the complexity of brain-structure and the laws that govern neural processes. But this is surely the very point that requires establishing, and our author cannot be said to have made any serious attempt to do so. It could only be done by a very careful examination into the mechanics of nervous action. Altogether this chapter does not impress me as a strong one, interesting and suggestive though it undoubtedly is. The question is left pretty much where it was, with the subjective consciousness of power on one side and the largest generalisations of physical science on the other, refusing to come to terms, and requiring the judicial intervention of the metaphysician.

With the next chapter, on "The Mind-Stuff Theory," the transition to properly psychological matter may be said to begin. It is vigorous with all the author's iconoclastic vigour. Poor Mr. Herbert Spencer comes in for the heaviest blows here. His peculiar use of the term 'nascent' for the purpose of smuggling in a new factor, as consciousness, in the series of evolutionary events, arouses our doughty knight's fiercest ire. It is true that Mr. Spencer has said that in tracing the gradual emergence of

conscious life he is offering no philosophical account of the nature and production of consciousness, and Prof. James refers to this explanation. All the same he holds by his charge that Mr. Spencer is trying to explain the origin of consciousness. It may be allowed that Mr. Spencer is not always as careful as he might be in distinguishing the psychological from the philosophical point of view. Nevertheless his critic seems in the present case to be a little unfair, and the smart reference to the "very small" outcome of feminine fault in *Midshipman Easy* looks very like a missing of the mark. But Mr. Spencer will no doubt take care of himself in this matter. More satisfactory is the examination of the mind-stuff theory in its psychological bearings. Here the author brings out his view of psychical fusion and analysis. To him a psychical product is not made up of the elements from which it can be shown to be derived. It is something new. He seems to approach here the idea broached by Stumpf in connexion with the analysis of clang, *viz.*, that psychical fusion is the correlative of a unification of nerve-processes. But the author's whole theory of psychical development is only vaguely defined, and one cannot but regret that he did not see his way to a careful examination of the subject in connexion with psychological method. This last (under the title "The Methods and Snares of Psychology") forms the topic of the following chapter, which, however, is very slight and incomplete. The chief new features in it are the following. First of all, Prof. James proposes to use the terms *thought* and *feeling* indifferently as generic terms for all sorts of psychical phenomena. Of this I can only say that it seems admirably fitted to render the existing confusion, in respect of psychological nomenclature, worse confounded. A second point is the very doubtful assertion that "psychologic *science*" treats not merely of subjective "thoughts," but of "their relations to their object to the brain and to the rest of the world" (i. 197). Lastly, he draws a sharp distinction between the object of the thought in B's mind, the mind studied, and the object of a like thought in the mind of A, the psychological observer. According to our author, the psychologist's fallacy consists in supposing that B's thought knows its object as A knows it. All this is important, though it seems to have more philosophic than properly psychologic significance. But then, as we have just seen, Prof. James includes "objects" of thought in the subject-matter of psychology, and this view of the dualistic standpoint of the psychologist is further insisted on in the following chapter, entitled, "The Relations of Minds to other Things". The invention of this heading, by the by, is a stroke of genius; for, to the common mind, it would seem impossible to group things so diverse as the continuity or interruption of consciousness, the seat of the soul, the relation of subject and object in cognition, under a single title.

In the next chapter, "The Stream of Thought," a good part of which has already appeared in the pages of MIND, we come to

purely psychological discussion. Here we see our author at his best. What Hobbes and Bain had done in one direction, *viz.*, to show that all mental experience is change, or a process of transition, Prof. James carries out in other directions. He rejects all the modes of psychologising, English and German alike, which regard, or seem to regard, mental life as divisible into distinct states. There is a "transitive," as well as a "substantive," factor, or aspect, in all our consciousness. The former is a particular mode of feeling. Thus there is a particular feeling, not only of before and after, side by side, but of "if" and of "and". This doctrine is opposed, not only to that of the Atomistic Sensationalist, who overlooks relations altogether, but to that of the Intellectualist, who views relations as imposed by thought on feeling. The true account of the matter is, that ideas of relation, like those of quality, are based on peculiarities of "feeling". In all this Prof. James seems to me eminently right. As we shall see, he makes excellent use of this idea of "feelings of tendency," or "psychic fringe," when he comes to take up the subject of general ideation.

The chapter on "The Consciousness of Self," is a shade too popular perhaps for its surroundings, but is excellent reading. Here we have dealt with side by side the idea and the feeling or emotion of Self; a circumstance, which, even if irregular (for nothing has as yet been said about the emotions), obviously gives the writer a great advantage. One might object, perhaps, that the resolution of the (Empirical) Self into the Material Self, the Social Self, that is, the Self as recognised by others, and the Spiritual Self has the look of a cross-division; but the author might possibly justify his bold innovation. The Spiritual Self is conceived of, not too clearly perhaps, as central spontaneous activity, which is first of all referred to the head, and then more courageously is resolved into a collection of peculiar motions "in the head or *between the head and throat*". The question of Personal Identity is dealt with in this chapter, but with less originality. The irrepressible "Soul" springs up again in this chapter too, though the reader may have fondly hoped that that ghostly entity had been effectually laid.

The chapter on "Attention" has more the look of a chapter written for a text-book. It is a good *résumé* of the facts and theories. Prof. James considers that attention involves a double neural process: (1) the accommodation or adjustment of the sensory organ, and (2) "the anticipatory preparation from within of the ideational centres concerned with the object to which the attention is paid". This seems to me sound, and a decided improvement on so one-sided a view as that of Prof. Ribot. When, however, he says that the only third process he can think of is inhibition of irrelevant movements I am surprised. So well read a student of psychology might surely have referred to the possibility of a vaso-motor factor in all states of attention.

The chapters on "Conception" and "Discrimination and

Comparison" (an odd sequence some will say) are particularly good. Conception is for our author "the function by which we identify a numerically distinct and permanent subject of discourse". What he is at most pains to bring out is that this logical sameness does not involve psychological sameness (? indistinguishableness) in the ideas employed. These may and do vary indefinitely. Psychologically the conceptual consciousness, the feeling of sameness, is a "fringe" or tendency accompanying the particular idea; and this view of tendency is applied with good effect to elucidate the nature of "general" ideas. The most remarkable feature in the account of Discrimination is a theory for explaining the improvement of this power by exercise. This our author supposes to take place in two ways: (1) by the different things taking on disparate associates, and (2) by the differences reminding us of larger differences. In other words, I go on improving in the discrimination of wine-flavours partly because the first unobserved differences become accentuated by the addition of obvious associated differences, those of name, appearance, &c., and partly because after observing a broad difference I can bring a smaller under this and assimilate it. This last idea is ingenious, and suggests a new relation between discrimination and assimilation. It wants, however, to be more fully developed.

The chapter on "Association" (previously published in the *Popular Science Monthly*) is of real scientific importance, and deserves a careful examination. All that can be said about it here is that it seeks to get rid of Similarity as a separate principle, and tries with considerable ingenuity to exhibit the central nervous process in association. With respect to his view of Similarity the author strikes me as not quite consistent. In dealing with Similarity under association he writes after the manner of Dr. Ward, as if all Similarity were resolvable into partial identity (*i.e.*, indistinguishableness). Yet in other places, as in his account of comparison (previous chapter), he seems to follow Stumpf and to hold that there may be likeness *without* partial "identity," a position he quite unambiguously takes up later on (ii. 209) when he points out that analogies of sensation (*e.g.*, "sweet tone") need not involve any compositeness of sensation and partial "identity".

The chapter on "The Perception of Time," also a reprint, is a full and interesting account of the time-presentation in the light of recent experiment. The two chief points here are, first of all, the sharp discrimination of a time-perception, or perception of a 'specious present' from the representation of past and future time; and secondly, the attempt to define the neural conditions of the time-consciousness in the "overlapping" of brain-processes. The author does not, I think, succeed in showing why the psychical correlative of such overlapping neural processes should fall into the particular form of a succession, or why, supposing a consciousness or "form" of time given, the overlapping should determine a particular time-order, *e.g.*, the

sequence AB, rather than BA. A simultaneous running on of different brain-processes is, on a consistent psycho-physical view of mind, a condition of all unifying or relationing consciousness, whether the relation be spatial, temporal, or one of likeness or difference. It is, of course, only so far as such overlapping brain-processes show differences *from moment to moment* that they can be of any use as determining factors in the production of the time-perception. In other words, it is only successive experiences which can yield the peculiar time-consciousness. It seems odd that the author did not here call in the help of his "fringe"-theory, and point out that all successive sensations or other mental contents carry with them in their "transitive" aspect the distinguishing *quale* of our time-consciousness. Time, in other words, is known, not by help of any overlapping brain-processes, or by any mystic interplay of ideas, but by a unique mode of consciousness, closely connected with that of change, which runs all through our mental experience. The definite persistence of sensations as after-images is, of course, an important element in giving a special definiteness to the consciousness of time-order or sequence in the case of all short series.

We must pass by a chapter on "Memory" which contains little that is remarkable, also the following chapters on "Sensation" and "Imagination," and come to the next two chapters on Perception, *viz.*, "The Perception of Things" and "The Perception of Space". The order of treatment here is strange-looking enough, and seems in one place to have puzzled the author himself, when, in dealing with the first aspect of perception, he writes, "as we have seen in studying Space" (ii. 101). There is, no doubt, some advantage in discussing the perception of material reality before taking up the space-perception. But our author does much more, and seeks to explain the perception of size, and the illusions of perception in general, before coming on to the space-perception; an arrangement which must, one is strongly inclined to suspect, have grown out of the piecemeal mode of production of the book.

The chapter on space-perception, reprinted from MIND, runs to just 150 pages, and is a remarkably full and vigorously reasoned presentment of the perplexing question. Prof. James starts with a "sensational" space (sensation even as distinguished from perception is cognitive for our author), or a feeling of bigness, which involves space in three dimensions, and is illustrated by the volume or bulk directly heard when there is a buzzing in the ears. Here he seems to go distinctly beyond Mr. Ward's primitive 'extensity'. This vague undifferentiated space-consciousness becomes definite by experience which serves to break up the primal bigness into distinguishable positions and dimensions. This definite sense of position, again, is reached by differentiating and rendering more distinct the local feelings connected with the stimulation of particular parts of the sensory surfaces (skin,

retina, &c.). Movement assists in the process of development, not by adding a new order of muscular sensation, but only (so far as I understand the writer) by first of all bringing out or sharpening the cutaneous or retinal local differences (for, as we know, movement over the skin makes the successive feelings of positions vivid through the element of change and freshness which it introduces), and secondly, by supplying an additional group of surface local differences, *viz.*, those in the surfaces of the joints which slide one over the other when the limb is moved. This, without going into the special complications of visual space, is in its main elements Prof. James's theory. It insists on the originality of the space-quality as a sensational element. It denies any power in movement and motor-sensation to suggest or even to contribute a new element to the space-consciousness. In order to give the *coup de grace* to the Bain-Wundtian theory it makes a clean sweep of the 'Muscular Sense,' denying its existence and resolving the so-called Muscular Sensations into surface and *quasi*-tactile sensations.

So well-planned and well-executed an attack on current doctrines deserves and will, one hopes, receive a more special examination than it has yet received in MIND, where it was first delivered. Here I can only record my own impression that, strong, masterly, as it undoubtedly is, particularly full as is its presentment of facts, it is after all far from being an exhaustive or even an impartial discussion of the question. In his eagerness to make out a simple intelligible view the author has failed, I think, in places to do justice to the complexity, to the ambiguous significance, of the facts. One striking omission is that of nearly all reference to the observation of children, with which must be taken the bare mention of the now celebrated cases of Cheselden's patient and others (ii. 210). Indeed one cannot help being struck with the fact that throughout this discussion the writer seems to argue uniformly from an examination of the space-perception in our *mature minds*, thereby making us recall his own warning in vol. i. not to fall into the "Psychologists' Fallacy," *viz.*, of confusing our (psychological) standpoint with the fact to be observed. Again, the whole view of the *rôle* of movement in the development of the space-consciousness strikes me as hardly less than perverse. A good deal of the argument acquires all its appearance of point by the complete ignoring of the fact that movement in empty space, as in describing a horizontal line or a circle with the forefinger, gives a clear and definite spatial (linear) consciousness. This of itself completely answers the laboured argument that the effect of movement is wholly indirect, by giving greater vividness to the local differences of the surface touched. The theory of Goldscheider and the author that resolves motor sensations into articular-surface sensations seems to be beset with difficulties. Among other queries that occur to one are the following:—Do two sensitive surfaces, one

sliding over the other, give the requisite conditions of exact measurement of spatial dimension? Rubbing one hand on the other gives, so far as the surface-sensations are concerned, in my own case, the vaguest idea whether of extent of movement or area covered. I do not understand how fine local discrimination by the system of joint-surface points, such as is required by the theory, could be developed in this way. The experiments on passive movement of Goldscheider quoted by our author, formidable as they look when directed against the "outgoing current" theory, seem to prove too much. Even Münsterberg, *facile princeps* among the latest simplifiers in psychology, allows that passive movements involve less contraction of the muscular fibres than active. One is tempted to ask here, moreover, how, if the sensations of the articular surfaces are the whole content of the muscular sense, we come to distinguish at all our own movements from those passively induced. Does Prof. James go so far as to say that the idea of a movement, if it were to be followed by a passive form of the corresponding movement, would give us precisely and *immediately* (apart from an illusory effect which might readily arise in so exceptional an experience) the active consciousness that we have in contracting our own muscles? Another question one would like him to answer is how on the articular-surface theory he explains the measurement of distance by *ocular* movement under circumstances where local differences of retinal points seem to play at most a very subordinate part, as in sweeping the eye from one star to another and distant one? He can hardly say it is the sliding of the eye-ball on the surface of the orbit; for, if the sliding of sensitive surfaces were the real source of the perception here, one would expect the measurement of ocular movement to be more exact when the lid is down, and so the surface-sliding increased, whereas, as he himself points out, it is particularly vague in this case. One may add, however, that on the whole the account of visual space, though a little too polemical in tone, is excellent, and illustrated by a good number of helpful drawings. The writer is particularly happy in showing that in our perceptions of form, distance, &c., we select a particular "visual reality" answering to dominant, practical want or æsthetic preference. While, however, he thus succeeds in making out that visual perception involves reference to past visual experiences, he does not, I think, do justice to the extra-visual references implicated. This is particularly true of the visual perception of the third dimension. This, as follows from what has been said, is, according to the author, implicit in the primitive visual "bigness," but he fails, I think, to make out how the "sensation" of distance is organically or anatomically conditioned.

The rest of this deeply interesting book must, in recognition of the finiteness of editorial space, be dismissed with a word or two. The chapter on "The Perception of Reality" or Belief, also a

reprint from MIND, is full of suggestiveness. The account of "Reasoning" is valuable through its emphasising of the practical moment of "sagacity," or the picking out of essential characters by the assimilation of which we are able to draw inferences. The list of human Instincts, which, according to our author, greatly transcends the number of animal instincts, looks a little arbitrary, and one is half disposed to ask irreverently, Why not include an instinct of standing on one's head, which is a strong and apparently unlearnt tendency in certain boys—Quilp's, for example? The account of Emotion, as essentially and mainly the reflected result of bodily movement and reflex organic change, is now well known, and the student will be glad to have it accessible. I believe it emphasises, to the point of exaggeration, no doubt, an important and inadequately recognised factor in our emotional states. In connexion with Emotion, by the by, one must not forget to point out one of the great gaps in the book. There is no attempt to define and to place in the scheme of mental life the phenomena of Feeling as a whole. A single chapter on "The Emotions," and on these mainly as instinctive movements in a ponderous treatise on Psychology, is nothing less than a cruel 'cut' to the sensitive side of our poor human nature. The account of Will is to be noted for its attempt to explain, somewhat in the manner of Münsterberg, how ideas of movements arise and become the psychical antecedents of actions. Here, again, we have elaborate psycho-physical hypotheses, and an ingenious attempt to interpret central nervous action by the idea of drainage. But the explanation is not quite clear to me. Special exception might here be taken to the curt and inadequate treatment of pleasure and pain as movement-prompters.

The work concludes with a chapter on Hypnotism, which shows first-hand knowledge of facts, and patient thought on the subject; and a closing chapter, headed "Necessary Truths and the Effects of Experience," which is far more philosophy than psychology, and looks very much like a 'job lot' at a sale into which the author has tumbled a number of matters he has not been able to deal with elsewhere. One closes the covers with a feeling of psychological "bigness," a sense of the vast stretch or swell of conscious life into which the movements of psychological thought are only beginning to introduce definite divisions. This feeling does not come from any indefiniteness in Prof. James's treatment, but, on the contrary, from his praiseworthy eagerness to reach definiteness. For, however it may be in the region of physical space, in that of psychological vastness it is only as we begin to establish definite divisions or distinctions within the whole that this whole itself, as a dim unexplored bigness, is perceived at all. May our author, aided by other vigorous workers on his own side of the water, go on subdividing and subduing the formless void!

JAMES SULLY.

The Development of Theology in Germany since Kant and its Progress in Great Britain since 1825. By Otto Pfleiderer, D.D., Professor of Theology in the University of Berlin. Translated under the Author's supervision by J. Frederick Smith. London: Swan Sonnenschein & Co. Pp. xii., 403.

The aim of this volume is to describe that *positive Aufklärung* or rationalistic movement which begins with Kant, and which forms so marked a contrast with the sceptical Rationalism of the last century. The result of the latter was, at least in relation to Theology, purely negative: for, as it extended the method of physical science to everything, and thereby established a thoroughgoing inter-connexion of the phenomena of nature, which left no room for the supernatural, it excluded theological truth in the form in which it had hitherto been received by religious men generally with the exception of a few mystics. The new Rationalism, on the other hand, while accepting this negative result as regards the miraculous form which had been given to spiritual truth by the imagination of the past, attempted to find a basis in reason itself for all that was essential or valuable in the ideas expressed under that form. It attempted, in short, to show that the content of religion, and particularly of the Christian religion, is capable of surviving the form which is destroyed by criticism. And it even maintained that that content rests upon principles which are implied in all scientific knowledge, and which are necessary to its final interpretation.

The development of this new or positive Rationalism is perhaps the most important intellectual movement of this century. We are not, indeed, as yet in a position to determine finally what will be its results, either in destruction or in reconstruction; but we can see its enormous transforming power in relation to theological belief. And no one can read the present volume, in which we have a rapid but comprehensive sketch of the history of the whole movement, both in Germany, where it originated, and in England, the country which was latest to be affected by it, without gaining a new sense of slow but inevitable character of its advance. In Germany especially the systematic progress of the militant idea, in spite of all temporary reverses, to a conquest of the whole field of thought has something of the aspect of a planned campaign, and might almost be said to supply a new link to the demonstration of the philosophical principle that the "rational is the real". The first stage of it was the specially *philosophical* movement, which commenced in the Critical Idealism of Kant, and was brought to clear consciousness of its own meaning in Hegel, with whom Dr. Pfleiderer justifiably concludes his short sketch of that movement. It is true that the recoil from Hegel, which is associated with the neo-Kantian revival, and the belated success of the philosophies of Schopenhauer and Herbart, as well as the various attempts at compromise which have been made by writers like Lotze, Wundt, and Hartmann,

have done much to throw light upon difficulties which were overlooked or imperfectly echoed in the first enthusiasm of the new Idealism. But though such discussions have helped to a clearer understanding of the nature and limits of what has been achieved, and in some measure perhaps to the opening up of new questions which it has left unsettled, it can scarcely be said that in *principle* there has been any *Epoch-machende* advance since Hegel. The real advance has been rather in the application of principles, which had been discussed and vindicated in abstract by philosophy, to the history of human thought in the past and those beliefs and institutions of the present which have been the result of that history. This application has, of course, revived all the divisions and debates of the philosophical schools; but it has revived them in a form more apprehensible to the general mind, connecting them with the details of historical and Biblical criticism and with urgent questions of belief and practice. In this volume Dr. Pfleiderer gives us the means of tracing this connexion, when he follows up his exposition of the philosophical movement by showing how the impulse thence received has gradually transformed, first the systematic treatment of Dogmatic Theology, then the methods of interpretation of the Old and New Testament, and finally the whole view of the religious history of the world, and especially of the Christian Church.

It would carry us beyond what is possible in a short notice to attempt to follow Dr. Pfleiderer into the details of a movement which, besides, lies somewhat beyond the province of a philosophical journal. I shall, therefore, content myself with two remarks: one in appreciation, and the other in criticism, of what he has done. In the first place, his account of the influence of Philosophy upon Theology renders it abundantly clear that in this relation the succession from Kant to Hegel should be traced rather through Schleiermacher than through Fichte and Schelling, neither of whom had any great *direct* influence upon Theology. Kant's ethical works, and especially his treatise on *Religion within the bounds of mere Reason*, opened the way for a rational reinterpretation of Christian doctrine: but the abstract and objective manner in which he expressed the new principle made his effort to apply it to Christianity appear too much like an external accommodation—the investment of idealistic morality with an ill-fitting dress of theological phrases. In order that the transforming process should be effectual, it was necessary that it should begin, so to speak, from the opposite end. And Schleiermacher, if not exclusively, yet in a higher degree than any other of the great philosophical writers of his time, had the qualification that he was first a Christian and only in the second place a philosopher, *i.e.*, that he started with an intimate experience of the spirit of Christian piety at its best, and that he was not disposed to yield any element which he felt to be essential or even valuable in life to the exigencies of abstract theory. Hence, while in

obedience to the idealistic principle he freed himself at a stroke from all the details of miracle and supernatural interference, his fear of a rationalistic evaporation of Christianity made him cling all the more closely to the idea of the archetypal originality of Christ, treat Christian doctrine as the reflective interpretation of a unique consciousness awakened by him in the Christian Church, and refuse to regard the opposition of Church and world as one which was destined to pass away. (See Dr. Pfleiderer's chapter on this subject, pp. 103-130, which is one of the best parts of his book.) These things explain the preponderant influence which Schleiermacher has exercised within the Church upon the theology of those whose religious life was most deeply rooted in traditional Christianity, but who were willing to admit the necessity of Rationalism in regard to everything but the one exceptional fact or principle which they regarded as essential. Hegel, on the other hand, in spite of his almost ostentatious acceptance of Christian doctrine as, in *essence*, the expression of philosophical truth, has been regarded with more suspicion or even sometimes denounced as an enemy. But the real difference between him and Schleiermacher is that he regards Christianity as itself an essential product of reason, and indeed as that form in which reason first, so to speak, defined to itself its own nature, or brought that nature to self-consciousness. Accepting, therefore, in the literal sense, the *anima naturaliter Christiana* of Tertullian, he could admit that Christianity should take its place with other religions in the natural process of development without claiming for it any exceptional position of *Urbildlichkeit*, while, on the other hand, he had the confidence that no change of form, produced by the free application to it of the idea of development, could be fatal to its essential truth.

The main criticism I should make on Dr. Pfleiderer's work is one which he has practically made upon himself, when (p. 154) he declares himself an Eclectic. Whether it be true or not that in theology "in a much greater degree than in philosophy systematic unity can never be more than an approximately attainable ideal," it is at least a doctrine *acquiescence* in which is dangerous to the theologian who admits it. He who confesses himself an Eclectic is too apt to become wavering and uncertain in his point of view. It has sometimes occurred to me that Dr. Pfleiderer might be described as an Idealist in his attitude to all other systems except Idealism itself, the bold statement of which seems to frighten him. Thus no one could object to his criticism of Hegel's tendency, especially in his later days, to give the most conservative possible interpretation of the idealistic principle. But when Dr. Pfleiderer tells us (p. 72) that the principle itself —the principle that "the real is the rational and the rational the real"—is a justification of the *status quo*, he is, one might fairly say, speaking to the gallery. Surely, if Dr. Pfleiderer's book proves anything, it proves that that doctrine is only not the

most revolutionary of all doctrines, because it is the very principle of all progress which finds the roots of the future in the present.

The last part of Dr. Pfleiderer's book is directed to the history of the rationalising movement in England from the time of Coleridge; and it is somewhat curious that the first attempt to give such a history should be made by a German writer. In this part of his work Dr. Pfleiderer is on less familiar ground, yet it is wonderful how well he has been able to take his bearings in the new region. Accustomed to the more systematic habits of German thought, he has sometimes brought to writers like Seeley and Arnold, and even to Carlyle, the demand for a more definite and thoroughly developed theory than they can supply; and his estimate of their power is somewhat unduly depressed by the nature of the standard he applies to them. At the same time he has produced an interesting and instructive sketch of the general movement, and his characterisation of the many individual writers is luminous and suggestive. I may refer specially to his remarks upon Newman and Maurice.

EDWARD CAIRD.

The Scope and Method of Political Economy. By JOHN NEVILLE KEYNES, M.A., University Lecturer in Moral Science and late Fellow of Pembroke College in the University of Cambridge, &c. London: Macmillan & Co., 1891. Pp. xiv., 359.

It may sometimes happen to a reviewer to meet with a book with which he finds himself in entire agreement. Whether such an occurrence will be altogether joyful is a question of some delicacy. There is something not unpleasing in the errors of our allies. We like to point out to them the better way: and our personal identity seems to demand some difference of opinion about it. Besides, that a book should deserve unmitigated praise is improbable *a priori*, and a cultivated literary taste rejects every kind of monotony. However, for the present reviewer such an hour of acquiescence has arrived.

Hitherto the fullest and best-known treatise upon the scientific character of Political Economy has been Cairnes's. It is true that this work added little except illustrations to the view presented by Mill in his *Unsettled Questions* and in the sixth book of his *Logic*. But the illustrations were so telling, the style was so luminous and persuasive, that it was deservedly recognised as a sort of authoritative manifesto of the school of economists at that time almost entirely predominant among us: the school which regarded the method of investigation and proof in Political Economy as nearly confined to the direct-deductive or 'Physical' method. The very fact, however, that Cairnes wrote before this doctrine had been very powerfully assailed or

widely disputed now renders necessary a new and more comprehensive survey of the whole question. The New Political Economy, the German School, the Inductive or Historical or Empirical School, by whatsoever name it may be known, has taken the field in force and put our traditional opinions on the defensive. Hence the present work was very much needed, and it is difficult to see how it could have been better done.

Mr. Keynes's book is by no means written in opposition to Cairnes's. It bears indeed much the same relation to its predecessor that Prof. Marshall's *Principles of Political Economy* bears to Mill's treatise: developing and enriching its ideas, modifying and adapting them to the present state of knowledge and research, by no means rejecting them. Its characteristics are a fuller consciousness of the relations in which Political Economy stands to other sciences, psychological, sociological and physical, and to the arts or practical sciences of ethics and politics; a stronger sense of the need of rendering it concrete, and of bringing it home to the special circumstances of different ages and nations; a recognition of the importance to these ends of historical and statistical knowledge; and at the same time a scientific appreciation of the assistance to be derived from mathematics. In short, there is nothing one-sided about this book. Mr. Keynes has taken account of all schools and of all good authors, both at home and abroad, and has made a just allowance for whatever truth there is in their several teachings, whether they have a clear conception of their own meaning or only blunder round about one.

It is perhaps strange that a belief should still widely prevail that deduction and induction are opposed methods of scientific research, but it seems to be too true. Our author, though too polite to say so, cannot help letting it appear that some who have expressed strong opinions upon economic method have supposed that a record of facts is induction, or that a miscellany of empirical laws is science (ch. ix.). The conception of Political Economy as a merely historical science turns out upon examination to be hopelessly vague and destitute of contents. To deny that there is any such thing as Economic Science is a bolder position, and has the advantage of rendering any discussion of its method superfluous.

On the other hand, those economists who have had the clearest conceptions of scientific method have not always applied them successfully to their own study. This was the case with Mill and Cairnes (ch. i.), who dwelt too exclusively upon the claims of direct deduction and verification, overlooking cases in which in their own treatment of the science induction took the lead. The greater part of Mill's treatment of Production is inductive (as Prof. Sidgwick has pointed out), and even in his book on Distribution the chapters on various forms of land-tenure and much of the four chapters on wages have the same character. In fact,

hitherto our representative writers on the method of Political Economy, though they have themselves been amongst the most enlightened and instructive of our economists, do not seem to have deliberately asked themselves, What really is our method? —but to have adopted too submissively the indications of general methodology, especially as illustrated by the reasonings of Ricardo's principal treatise. It is no wonder then if an author, dissatisfied with their system, regarding it perhaps as too narrow in its basis, or wanting in direct applicability to particular countries, should take them at their word as to the nature of their method, and should thereupon attribute to the insufficiency of that method whatever shortcomings he felt or imagined in their system. This might easily lead to a demand for inductive as opposed to deductive procedure, and for historical instead of hypothetical illustrations. And an opposition once formed, its more violent partisans would forget (if they ever knew) that in Mill's view deductive method is matter-of-fact to the core, derives its premisses from observation, and by observation verifies its conclusions, and that neither he himself nor those in agreement with him had any disregard for history or for contemporary experience.

Yet, as Mr. Keynes shows us, the more moderate members of the so-called historical school, such as Roscher and Wagner, do not reject deduction. There is no fundamental opposition between them and Mill in respect of method, but merely a difference of more or less in relying upon ratiocination or upon observation. This is particularly the case if in comparing these authorities we attend not merely to what they say about the right procedure, but to how they proceed. He points out, therefore, the superficiality of contrasting an 'English' with a 'German' school; as if Adam Smith and Malthus were not inductive enough, as if the historical method had not distinguished adherents in England, or as if the deductive method were foreign to Germany. Surely nothing could be more unsuitable, more suspicious, I may say more ludicrous, than such a use of geographical or political epithets for scientific distinctions. It marks the fanaticism of partisanship when patriotism or anti-patriotism is summoned to stimulate the rage of scientific controversy. By professing adherence to the 'German school' a man may indeed earn the praise of that sort of impartiality that exults in undervaluing one's own countrymen, who happen also to be one's nearest rivals. But what can any disinterested spectator think of the state of that science in which such terms are possible? We do not now hear of German Algebra, nor of German Chemistry (I believe); though we do sometimes of German Metaphysics, *et cetera*. Such are the epithet's associations.

As to the Historical Method, there are passages in the sixth book of Mill's *Logic* which deserve more study than the historical school seems to have bestowed upon them, and which at the

same time help one to understand how this method should have come to be considered antagonistic to Mill's conception of Political Economy. In ch. ix., discussing the Direct, or Physical, or Concrete Deductive Method, he describes it as especially adapted to the investigations of Political Economy, since the desire of wealth has in industrial and commercial affairs such predominance over all other motives as to furnish the science with a commanding first principle. Starting from this the inquirer may deduce consequences which, if verified by comparison with the facts of history and contemporary experience, may be taken to be laws of nature. He then proceeds in ch. x. to discuss the Inverse Deductive or Historical Method, applicable (as he explains) to the investigations of general sociology. In using this method the inquirer begins by directly generalising from history empirical laws, which he then seeks to verify by deducing them from the laws of human nature. If thus deducible, the generalisations from history become laws of nature, but until deduced they are merely empirical, and do not amount to science. Now, in this chapter he makes no mention of Political Economy as likely to obtain any assistance from the Historical Method, and thus the impression might be left upon a reader's mind that in Mill's opinion the Historical Method had no place in Political Economy. Still it would be absurd to suppose that Mill was such a pedant as to object to the ascertaining of truth by any method. And, in fact, we find that he does employ the Historical Method (as he conceived of it) in his own economic investigations. His treatment of the merits and drawbacks of Peasant Proprietorship follows the Inverse Deductive Method. He first generalises the economic consequences of Peasant Proprietorship from the evidence furnished by observation; and then shows that these consequences are such as we should expect from human beings placed in the given circumstances. There are many other demonstrations in which this method is naturally adopted by economists, probably without ever thinking of the logic of the case. Gresham's Law, for example, is a direct generalisation from experience, and its verification by deduction from self-interest is so obvious that one hardly thinks of it as a process due to the requirements of methodology. But the obviousness of the deduction does not render it needless, for without it Gresham's Law would be an utterly unintelligible empiricism, and could have no place in science. However, as Mr. Keynes shows, some of the extreme adherents of the Historical School seem to suppose that empirical generalisation is enough for science, and that deduction is superfluous: but this is another way of saying that explanation is superfluous. It seems to me that Mr. Keynes's chapter on "Political Economy and Economic History" might be made more effective by introducing into it a more explicit and formal statement of the Historical Method as Mill conceived of it and as the author plainly accepts it.

I have not attempted to examine Mr. Keynes's book in detail, for a reason which I believe any reader of it will acknowledge to be a good one. The abundance of its details, its happy distinctions, lucid explanations, judicious reconciliations of opposing doctrines, comprehensive knowledge of the controversy, masterly command of the resources of scientific method, fertility of forcible illustration and succinctness of statement—make selection nugatory and a brief analysis impossible. It really seems not too much to hope that this work may be effective in dissipating many errors with regard to economic method, in moderating the extravagance of contending schools, and in thereby expediting the progress of the science.

CARVETH READ.

Die Hypnose und die damit verwandten normalen Zustände. Vorlesungen gehalten an der Universität Kopenhagen im Herbste, 1889. Von ALFRED LEHMANN, Dr. Phil., Docent der Experimentellen Psychologie. Leipzig: O. R. Reisland, 1890. Pp. viii., 194.

This book contains a psychophysical theory of hypnosis, worked out with convincing clearness and thoroughness. The author judiciously abstains from any attempt to explain phenomena peculiar to the great hypnosis to which hysterical patients are subject. The consideration of these complications ought, he thinks, to be postponed until a clear insight has been obtained into the nature of hypnotic phenomena as exhibited by normal persons.

According to Dr. Lehmann, the essential characteristic of hypnosis consists in a peculiarly one-sided concentration of attention. This view he shares with many other writers. The distinctive feature of his treatment of the subject is that he throughout regards attention from a psychophysical point of view, as dependent on the distribution of the blood to the various parts of the brain. "When an organ becomes active it receives an increased supply of blood by reflex action of the vaso-motor mechanism . . . and this change may be localised within very narrow limits." Now the internal carotid and its ramifications do not differ in structure from other arteries; we may, therefore, fairly assume that the special activity of any part of the brain produces an increased flow of blood to that part. This process is the psychophysical counterpart of attention, corresponding to it point for point. Without a certain degree of attention a sensation cannot come into being. Expressed in psychophysical language, this means that "psychical changes" are not appreciable in consciousness unless the part of the sensorium affected by them receives an augmented supply of nutrition. Attention may vary greatly in degree of concentration, because the afflux of blood on which it depends may vary within wide limits in amount and rapidity. The full concentration of

attention on a presentation causes the disappearance of others, because when the flow of blood to any given part of the brain is at a maximum it becomes proportionally diminished in other parts. Involuntary attention is easily explicable as a vaso-motor reflex following immediately on the excitement of this or that part of the sensorium by an external stimulus. The distinctive feature of voluntary attention is that it depends on the interest of the presentation attended to. But interest consists in the association of the interesting presentation with a group or series of other presentations of pleasant or unpleasant character. Expressed in psychophysical terms, this means that the more interesting a presentation is the greater is the corresponding nervous excitement. This will naturally produce a stronger stimulation of the vaso-motor centres. Thus, both voluntary and involuntary attention ultimately depend on reflex action of the vaso-motor mechanism.

Lehmann applies this theory to explain the phenomena of normal sleep, and so paves the way for the explanation of hypnosis. Sleep is consequent upon cessation of mental activity, occasioned by fatigue or by other conditions. This cessation of mental activity involves a discontinuance of the stimulation, which, in waking life, constantly proceeds from the active part of the "sensorium" to the vaso-motor centres. Hence the distribution of blood within the brain becomes more uniform, and in all probability the latent innervation of the whole vaso-motor system of the brain is momentarily weakened. The blood moves more slowly, and the entire brain receives, in consequence, a diminished supply of nutrition. The activity of the centres which control the movements of the heart and of the organs of respiration is lowered; hence the breathing and circulation become slower. This produces a general diminution of metabolic process throughout the organism, including the brain. In this way sleep becomes gradually deeper, until after a short time it reaches its maximum. When all organs have, by duly prolonged repose, recovered their efficiency, a slight stimulus suffices to awaken the sleeper, by setting up a strong vaso-motor reflex, which, by exciting the vaso-motor centres, intensifies the latent innervation of the blood-vessels of the brain generally. In deep sleep such a reflex can be produced only by an intense stimulus, or by one which has a peculiar interest for the sleeper. On this last point Lehmann lays great stress. The psychostatic condition of the mother who is aroused from sleep by the slightest cry from her sick child, although she is undisturbed by much louder sounds, is, according to him, essentially analogous to that of the hypnotised subject who is in *rapport* only with the hypnotiser. The mother goes to sleep with her attention fixed upon her child. The hypnotised subject sinks into trance with his attention fixed upon the proceedings of the operator. The result is that each remains sensitive to impressions of the kind with which they were respectively preoccupied even after they have ceased to be

sensitive to other impressions. The value of this analogy evidently depends upon the degree of affinity between hypnosis and ordinary sleep. According to Lehmann, these states are very closely allied. The hypnotic trance is, according to him, nothing but a partial sleep in which only a restricted portion of the brain continues to be excitable.

He supports this view by an analysis of the methods by which hypnosis is induced. Bernheim has often transformed ordinary sleep into hypnosis by merely laying his hand on the forehead of the sleeper and saying 'Sleep on quietly, do not wake'. Lehmann's explanation is as follows:—"The contact so far awakens the sleeper that he is able to hear what is said to him. He recognises the voice of the physician, and being accustomed to obey orders coming from that source he continues to sleep. But his attention is already directed to the speaker so as to be in *rapport* with him. In other words, normal sleep has passed into hypnotic sleep." Great stress is laid on Bernheim's method of producing hypnosis by suggesting sleep, as clearly showing the essential affinity of the two conditions. A careful examination of the method of monotonous stimulation yields a similar result. Persistent attention to a monotonous and wholly uninteresting stimulus causes fatigue and general stagnation of mental activity. It, therefore, tends to induce sleep. If the subject is left to himself he gradually sinks into a state hardly distinguishable from ordinary sleep. But he is not left to himself. Throughout the whole process his attention is directed towards the proceedings of the operator. His mind, therefore, remains fixed in an attitude of response to impressions coming from this source, even when it is becoming insensible to all else. The hypnotiser, availing himself of this special *rapport*, interferes to arrest the process of somnolescence midway. Suggested ideas and actions keep the subject in a state of partial wakefulness, causing him to dream a series of dreams, having as their common centre and starting-point the persistent presentation of the hypnotiser. Such one-sided fixation of attention has for its psychophysical counterpart a fixed vaso-motor arrangement by which only a certain limited portion of the sensorium is supplied with nutrition adequate to sustain mental activity. This theory is not inconsistent with the existence of cerebral hyperæmia in hypnosis. The nutrition of the brain depends on the rapidity of the flow of blood, so that a decreased rate of flow means more imperfect nutrition. Now the recent researches of Geigel on the mechanical conditions of the distribution of blood within the brain show that the dilation of the capillaries, which produces hyperæmia, involves diminished rapidity of flow. In hypnosis the one-sided fixation of attention consists in a tetanic contraction of certain blood-vessels producing an accelerated movement of the blood in the wakeful part of the brain. This hypothesis seems, in some degree, to explain why, in deep hypnosis, the subject is insensible to even the most violent impressions which do not come from the operator. The

impossibility of awaking the sleeper by ordinary means is one consequence, among others, of this fixed vaso-motor arrangement.

It would seem, according to Lehmann's theory, that hypnosis induced by a visual impression ought to be characterised by a special wakefulness of the sense of sight. But in point of fact the sense of sight goes to sleep while the muscular and auditory senses remain awake. Lehmann meets this difficulty by pointing out that the order in which our senses go to sleep is not determined by the previous direction, but by anatomico-physiological conditions of which nothing is known. In normal sleep, taste and smell are the first to sink into inactivity, then sight and the senses of heat, cold and pressure. What remains to the last obscurely present to consciousness is the position of the limbs and the sounds which strike the ear. There is no reason why this sequence should be altered in hypnosis. Sight and touch fall asleep before hearing and the muscular sense. The monotonous and uninteresting stimulation of the visual sense tends to send it to sleep by producing fatigue rather than to keep it awake. If the subject is left to himself, the other senses fall asleep also. But if he is taken in hand by the operator before this deep state has supervened, he is kept in that condition of partial alertness in which he is open to suggestions *ab extra* conveyed in the first instance through the muscular or auditory sense.

Lehmann next proceeds to explain one by one the leading phenomena of hypnosis. This task is performed in a very thorough and careful manner. First, he considers the state of the sensibility during hypnosis. According to his theory, the reaction-time for the waking senses ought to be shorter and the laminal intensity smaller than they are normally, partly because attention is immovably concentrated on the stimulus, and partly because there are no competing sensations of touch and sight. This inference from his theory is, he thinks, fully borne out by experiments. He refers in this connexion to the work done by Beaunis, but he does not seem to be acquainted with the experiments of Stanley Hall or of W. James. The extraordinary minuteness and accuracy of hypnotic memory is explained as due to the undisturbed and exclusive concentration of attention on the successive links in the train of associated ideas. Forgetfulness in the waking state of what has taken place in the trance is accounted for by two considerations: (1) The associations formed in hypnosis are in waking life overborne by a coherent system composed of innumerable counter associations sustained by the multitude of impressions "which stream in from the external world". (2) The ideas belonging to the trance are associated with a state of organic sensation profoundly different from that which normally forms the basis of personal self-consciousness. Hence, even if these ideas did emerge into the waking consciousness they would appear as a mere play of fancy, not as actual occurrences personally experienced. Lehmann's book was written before Prof. Pierre Janet's *L'Automatisme psychologique* (see MIND,

xv. 120) appeared. Otherwise, I presume, he would have availed himself of Janet's extremely interesting and important researches on the connexion of the state of the memory and the state of the sensibility during hypnosis.

Lehmann's treatment of suggested hallucinations is very interesting. Images differ from percepts in being less distinct and more subject to voluntary control. Now the hypnotised subject has lost free command over his mental imagery: suggested presentations have for him the fixity and independence of percepts. They will, therefore, present themselves to him as actual objects if they are sufficiently distinct.[1] Here, however, we are confronted with a difficulty. Beaunis has discovered by experiment that hypnotic hallucinations are really very indistinct. He suggested to his subjects that they should see the drawing of a dog or some such object on a piece of paper. He then told them to trace the outline with a pencil. The result was, in some cases, a drawing in which it was difficult to recognise any likeness to the object. Beaunis naturally inferred that the suggested images had not really the distinctness of percepts. Lehmann replies that, for those who have not the trained eye of an artist, objects as actually perceived ordinarily fall far short of the distinctness of a recognisable copy of the same objects on paper. It is only by intentional examination that we discriminate distinguishing details so as to be able to reproduce them with a pencil. Lehmann supports this position by adducing an experiment made by himself. It so happened that a quarter of an hour before reading the account of the experiments of Beaunis he had attentively watched the playful movements of a dog for about five minutes. After reading Beaunis he immediately attempted to draw with all possible accuracy his memory-image of the dog. The result was a rude outline of an animal which a zoologist would have been puzzled to classify. In corroboration of Lehmann's view, I may mention an experience of my own. It sometimes happens that I become aware of the fact that I am dreaming while the dream-imagery persists. On some of these occasions I have set myself to examine the imagery. I have always found that examination was impossible. By no effort can I discriminate new details in the total presentation. But the effort conspicuously succeeds in another way. It brings home to my mind the indistinctness of the images. Since dreams are the closest analogue of hypnotic hallucinations, I am inclined to lay some stress on this point.

The suggestion of postures and movements in hypnosis is discussed with great care and clearness. The general principle of explanation is that the invariable psychological antecedent of movements which are not automatic is the exclusive or dominant

[1] I commend the consideration of this point to those who find the characteristic mark of reality in subjection to the will.

concentration of attention on a motor presentation. The possibility of successfully suggesting post-hypnotic memory of hypnotic occurrences is accounted for by an association between what happens in the trance and the suggested idea of being awake. The operator says to the subject: 'When you *wake*, you will remember this'. The word *wake* momentarily calls up the presentation of the waking state, or, to speak more accurately, the subject is for the moment partially awoke. Thus, an association is formed which gives rise to post-hypnotic memory. This explanation does not, of course, cover the peculiar difficulties connected with post-hypnotic remembrance occurring after a long period, at a date which the subject must himself ascertain by a calculation made in the intervening time. Lehmann thinks that in such cases the requisite calculation is made in dreams. Having considered how post-hypnotic remembrance can be produced by suggestion, the author proceeds to deal with the further problem—why these remembrances give rise to hallucinations and actual movements as they would do in hypnosis. His solution is that the recall of the occurrences of the trance occasions a transient reinstatement of the trance itself. He does not make any reference in this or in any other part of his work to the simultaneous duplication of consciousness for which so much evidence has been adduced by Gurney, Janet and others; and he does not seem to be acquainted with Gurney's experiments reported in the *Proceedings of the Society for Psychical Research* for May, 1887, on the mental condition of subjects in the interval between the cessation of hypnosis and the post-hypnotic fulfilment of suggestion, and also at the time when the suggestion is being carried out.

The distinctive merit of Lehmann's work lies in the systematic thoroughness with which he has kept in view his central psychophysical conception. His theory of attention is, of course, not substantially new. In England it has been advocated by Carpenter, and it is, I believe, held by Dr. Ward. Lehmann, however, has been enabled by the aid of Geigel's researches to improve the form of the theory, and to apply it in this improved form to the explanation of hypnosis. In his treatment he has been in most points anticipated in a greater or less degree by previous writers. The affinity between sleep and hypnosis has often been pointed out. Bertrand insists on the analogy of the *rapport* between subject and operator to that between the sleeping mother and her child. The part played by modifications of the coenaesthesis in producing discontinuities of memory and of personal consciousness is well known. The originality and value of Lehmann's work lie in his persistent and successful endeavour to connect the special explanation of the several hypnotic phenomena with a general psychophysical theory of hypnosis.

G. F. STOUT.

VI.—NEW BOOKS.

[*These Notes (by various hands) do not exclude Critical Notices later on.*]

Essays: Scientific, Political, and Speculative. By Herbert Spencer. Library Edition. 3 Vols. London: Williams & Norgate, 1891. Pp. viii., 478; 466; 492 (with Subject-Index by Mr. F. Howard Collins, pp. 493-516).

Mr. Spencer's three volumes of *Essays*, originally published in book-form at intervals from 1857 to 1874, are here republished, with modifications and additions, in uniform style with the volumes of the "Synthetic System of Philosophy". As not a few of his most notable contributions to science and philosophy are to be found among the *Essays*, it is matter of congratulation that he should have used some part of his restored vigour of body in giving to the collection of his occasional writings this definitive and appropriate form. The additions are considerable, consisting of six essays written since 1882, besides "a conversation and a speech" entitled "The Americans," called forth on occasion of a visit in that year to the country which was less slow than his own to do him justice. The modifications are not inconsiderable, both as regards particular essays and as to the ordering of the whole collection. The order is now so fixed that vol. i. is made up of essays in which the idea of evolution, general or special, is dominant; that vol. ii. is occupied with philosophical questions, with abstract and concrete science and with æsthetics, in the treatment of which evolutionism is kept rather implicit; and that vol. iii., consisting of ethical, political, and social essays, is of a mainly practical character. The author gives references to a few other essays or notes (from 1875 to 1885) which he has not thought fit to republish. One which he has felt bound to reprint—"Prof. Green's Explanations" (ii. 321-32)—is now prefaced and concluded with some remarks that will hardly command universal sympathy. But when it is added that the *Essays* now include—besides such well-known pieces as "The Classification of the Sciences," "The Physiology of Laughter," &c.—the elaborate "Factors of Organic Evolution," published separately some years ago, nothing more need be said to recommend the collection to philosophical readers.

Browning as a Philosophical and Religious Teacher. By Henry Jones, M.A., Professor of Philosophy in the University College of North Wales. Glasgow: James Maclehose & Sons, 1891. Pp. xii., 367.

"The purpose of this book," says the author, "is to deal with Browning not simply as a poet, but rather as the exponent of a system of ideas on moral and religious subjects, which may fairly be called a philosophy." It is very well, and even eloquently, written. Nothing could be more thorough than Prof. Jones's command of the poet's works in all their width of range, or more just than the discrimination that tempers the enthusiasm of his admiration. His book—or at least the greater part of it—may be read, for its mere literary interest, with no ordinary profit. The philosophical motive has, however, been uppermost with the author. Having worked out (under general Hegelian influence), into a clearness of his own, a body of ideas bearing upon human knowledge and

conduct, he makes a criticism on Browning the vehicle for bringing these forward. At some stages of the poet's development, chiefly the earlier, he finds in Browning a close approximation to what he regards as the true philosophic understanding of man and the world, but followed in the later stages, for the most part, by a falling-back from the higher level once attained. The causes of such backsliding (supposing it to be a fact) do not seem to be sufficiently indicated, whether by reference to external influences of the time or to the nature and unsystematic training of the poet's mind. And, generally, as is apt to be the way of those with whom Prof. Jones thinks, there is a disposition throughout his volume to ignore or make light of all spiritual influence that does not come from the one approved German source. Notwithstanding, there is much in his more philosophical chapters which is as strenuously thought out as it is felicitously and vividly expressed. Mention, especially, should not be omitted of his well-pointed observations on the conditions of poetic art in comparison with philosophic thinking.

Proceedings of the Aristotelian Society for the Systematic Study of Philosophy. Vol. I., No. 4 (pt. 1). London: Williams & Norgate, 1891. Pp. 1-39.

This issue contains the Presidential Address for 1890 on "The Laws of Association," a note on "The Categories of Scientific Method," by Mr. R. B. Haldane, and contributions by Mr. A. Boutwood, Mr. H. W. Blunt, and Mr. G. F. Stout to a "Symposium" on the question, "Does our Knowledge or Perception of the Ego admit of being Analysed?" The chief paper is the Presidential Address (pp. 1-21). Here Mr. Hodgson develops, with special reference to Association, his general psychological doctrine that the real conditions of all mental occurrence are to be sought in the organism. Regarded simply as mental occurrence, Association of Ideas is to be defined as "spontaneous redintegration". It occupies an intermediate position between the two other main and comprehensive functions of the Subject, considered simply as conscious agent, *viz.*, "sense-presentation" and "volitional reactive redintegration". Association is first found to depend, in appearance, upon "similarity" and "contiguity" with "emotional interest". These factors, it is decided on examination, do not suffice for a scientific account of the conscious processes. For such an account we must be able to assert their dependence on physiological processes; and, in fact, we are able to assign as their real conditions definable processes in the nervous system. "Apparent association by similarity is evidence of similarity in brain processes in one and the same part of the brain; and apparent association by contiguity is evidence of an established continuity or permeability of channel between different parts of it. Similarity and continuity in brain processes are the real conditions, or *verae causae*, of similarity and contiguity in the states and processes of consciousness in trains of redintegration." Also, it may be "fairly inferred that there are brain processes specially subserving emotions, closely bound up with those which subserve imagery, and entering with them into many, if not all, the parts of the whole redintegrative organism, and into the connexions between them". Laws governing the actual course of particular redintegrations may be called Dynamical; those that apply to all spontaneous redintegrations alike being called Statical. We cannot at present formulate any Dynamical Laws. "The hope of our ever doing so must lie in the continued investigations of physiological and experimental psychology." Statical Laws which can be formulated are "that the redintegration both of imagery and of emotion depends upon (1) depth or strength of the original impressions which are afterwards

liable to recall; (2) number and permeability of the connexions between different cerebral organs and processes; and (3) increase of what belongs to both the first and second of those heads by frequency of repetition and consequent habituation".

The Art of Literature. A Series of Essays, by ARTHUR SCHOPENHAUER, selected and translated, with a Preface, by T. BAILEY SAUNDERS, M.A. London: Swan Sonnenschein & Co., 1891. Pp. xv., 149.

This is another volume of essays selected and translated by Mr. Saunders from the *Parerga und Paralipomena* (for the last see MIND No. 61, p. 141). Like all the former volumes, it is an excellent piece of translation. The contents have been arranged with special skill. The subject of literature as an art, Mr. Saunders points out, was one upon which Schopenhauer was particularly qualified to speak. In the present little volume, as he well says, "we have observations upon style by one who was a stylist in the best sense of the word, not affected, nor yet a phrase-monger; on thinking for oneself by a philosopher who never did anything else; on criticism by a writer who suffered much from the inability of others to understand him; on reputation by a candidate who, during the greater part of his life, deserved without obtaining it; and on genius by one who was incontestably of the privileged order himself".

Riddles of the Sphinx. A Study in the Philosophy of Evolution. By A TROGLODYTE. London: Swan Sonnenschein & Co., 1891. Pp. xxvii., 468.

This is an attempt to arrive at a metaphysic compatible with modern science. The name assumed by the author has the Platonic reference, and the book is dedicated to "a fellow-prisoner in the cave". His metaphysical doctrine is not put forward as novel—novelty, he thinks, would be regarded as an objection to it—but rather as agreeing in spirit with older philosophy, and yet as "substantially a *philosophy of Evolution*". "The author must refuse to apologise for what may seem the romantic character of some of his conclusions." The relation of the book to Christianity is one of complete independence, though not, he hopes, necessarily of conflict. Critical Notice will follow.

Principles of Natural and Supernatural Morals. By the Rev. HENRY HUGHES, M.A., formerly Junior Student of Christ Church, Oxford; and sometime one of H.M. Inspectors of Schools. Vol. I.—Natural Morals. Vol. II.—Supernatural Morals. London: Kegan Paul, Trench, Trübner & Co., 1890, 1891. Pp. xii., 369; xi., 321.

This book concerns theologians much more than philosophers, but, as a large part of it deals with philosophical topics, its purpose and principal contents may be noted. "The main purpose of the book is to establish the thesis that there are, not one, but three sciences of morals." The first of these is "a science of the motives and ends of conduct that belong to pagan or non-religious man, to man regarded simply as a voluntary agent forming part of the world of nature". This is the subject of volume i. An attempt is first made to exhibit a system of natural morals "generally applicable to the case of dwellers in pagan lands," and, as the author thinks, in important particulars not unlike the morals of Aristotle. This fills chapters i.-xii. The remaining chapters of the volume (chs. xiii.-xviii., pp. 263-369) are devoted to criticism of the ethical doctrines of Butler, Kant, J. S. Mill, Mr. Sidgwick, Mr. Spencer, and Dr. Martineau. After the science of natural morals, there is, "secondly,

a science which, while it includes the former, takes account also of other phenomena arising from man being brought into conscious relations with God. Of the whole body of phenomena with which this science has to do, Jewish morality may be taken as the type. And there appears to be, thirdly, a science which embraces within its scope all the phenomena of the moral life of the present day, those which are at the same time Jewish together with others which are distinctively Christian." Volume ii. accordingly consists of two Parts, the first of which deals, in ten chapters, with "Jewish Morals," and the second, in seven chapters, with "Christian Morals". The principle of Jewish morals is obedience to God as making known certain commands by revelation. Christian morality has its basis in a "new birth," or "new creation of humanity". "A member of the Christian Church is regarded as being, by the constitution of his nature, the subject of certain motives and ends of conduct which are altogether foreign to persons who have not been admitted into it." "Christian morals is the science of the conduct of a new race of men, of a race endowed with the germs of a moral constitution higher than any that can ever be developed among the once-born posterity of Adam. As natural morals and Jewish morals presuppose in man higher moral capabilities than any that belong, or can ever belong, to the animal creation, so Christian morals presuppose in the Christian higher moral capabilities than any that belong, or can ever belong, to the mere natural once-born man." The great contrast between the natural moral life and "the life of the new nature" is this. "In natural morals there appears to be an assertion of one's own will, as a will which moves freely among other freely-moving wills, which is orderly and legitimate"; while, on the contrary, "in Christian morals there is no assertion of individual will in relation to other wills which is not in itself disorderly and illegitimate" (ii. 307).

Body, Parentage, and Character in History: Notes on the Tudor Period. By Furneaux Jordan, F.R.C.S. London: Kegan Paul, Trench, Trübner & Co., 1890. Pp. vi., 82.

The author's work, *Character as seen in Body and Parentage*, to which this is a sequel, was noticed in Mind, xii. 298 and (2nd ed.) xv. 582. The formula at which he finally arrived was that all characters may be divided into the classes—"active-unimpassioned," "reflective-impassioned," and intermediate or mixed. The greater part of the present little volume is occupied with an analysis of the character of Henry VIII.; the aim being to show that he was really of the "active-unimpassioned" class. Some concluding pages on "Queen Elizabeth and Queen Mary" are intended to show that the characters of Henry and of Elizabeth were in all essentials the same (the classification applying equally to men and women), while the Queen of Scots was of exactly the opposite character. There is much lively disquisition on the personages and events of the period generally.

The Philosophy of Right with special reference to the Principles and Development of Law. By Diodato Lioy, Professor in the University of Naples. Translated from the Italian by W. Hastie, M.A., B.D., &c. In 2 vols. London: Kegan Paul, Trench, Trübner & Co., 1891. Pp. xli., 353; viii., 392.

Having already brought some of the work of German jurists within the reach of English readers (see Mind, xiii. 130) Mr. Hastie has here translated the *Philosophy of Right* of the eminent Italian jurist Lioy. The fact that it has been translated into German, French, and Spanish,

besides reaching the third Italian edition, is, as he remarks, a guarantee of its interest and value. The present translation has been done with the sanction and co-operation of the author, who has made important additions and modifications on the last edition of the original work. The Table of Contents has been enlarged, and the Summaries and Bibliography, left out by the German and French translators, have been rendered. In introducing the work, Mr. Hastie sets forth the historical circumstances that have made Italy in a special way the home of juristic studies. "It is in the highest department of all," he contends, "the one which crowns and unifies and completes all the others, that we meet with the most characteristic and original products of the juridical genius of the modern Italians. The Philosophy of Law has been nowhere cultivated with more earnestness, assiduity, and success, during the present century, than in Italy." Prof. Lioy does not depart from the tradition of dealing first with fundamental problems. His "Prolegomena," extending over pp. 1-132 of vol. i., contain sketches of the history, not only of the "Philosophy of Right," but also, before this, of "Metaphysical Speculation" and "Ethics". In general philosophy he attaches himself more closely to Gioberti, and in juristic philosophy to Vico. "Right" is treated, from the philosophical point of view, first as having certain ends or "objects," which are special forms of "the good," and in the course of historical development have become explicit in Religion, Science, Art, Industry, Commerce, Morality, Justice. These "Objects of Right" are dealt with in the remainder of the first volume. The second volume deals with the "Subjects of Right," in which the objective relationships are realised. Beginning with the Individual, the author finds that history nowhere presents individuals in isolation, but only "families, tribes, races, peoples, or states". The individual therefore is to be considered, "not as a whole in himself, but in relation to the whole". The Family is viewed as the earliest form of society; whence the author ascends through the Commune, the Province and the State, up to Humanity. Under the head of "Society of the States" there is a considerable treatment of International Law. The work is especially full on the side of comparative study of codes and institutions.

The Intra-Cranial Circulation and its relation to the Physiology of the Brain. By James Cappie, M.D. Edinburgh: J. Thin, 1890. Pp. 188.

Dr. Cappie here sets forth a general theory of the physiological bearing of the brain's anatomical surroundings, not without special reference to the view of the causation of sleep expounded in an earlier work (see Mind, viii. 307). Great prominence, he holds, should be given to the circulation as one of the essential factors of the brain's activity. The peculiarities of the intra-cranial circulation, as contrasted with that of other regions of the body, are, accordingly, first discussed. The question is then put, How is the circulation in the brain physiologically determined? The special points the author seeks to establish are these. The contents of the skull are for ordinary intervals of time unchangeable in total bulk; changes in circulation are therefore changes in internal distribution of fluids. Normally, there is hardly any change in the local distribution of the cerebro-spinal fluid, as compared with the total quantity of blood in the brain; changes in distribution therefore can only be between the arteries and capillaries on one side and the veins on the other. There is a constant ebb and flow between the veins of the pia mater and the brain-tissue in which the capillaries are distributed. The contents of the skull are not immediately affected by

atmospheric pressure, all foramina being so closed during life as to prevent this. If atmospheric pressure has any influence, it must be exerted through the vessels in their course outside of the skull. Atmospheric pressure, thus exerted, is one of the principal factors in regulating the intra-cranial circulation. Being a constant cause, it cannot by itself produce changes in distribution. These have their primary source in molecular activity within the brain; such activity in the tissues being, according to the view accepted by the author, a factor as indispensable as the heart's action in determining the circulation everywhere. Let us suppose molecular activity in the brain to become slower. Among the effects will be that the pressure of the atmosphere retards to a greater extent the return of blood through the veins. Less blood will now circulate in the arterial and capillary vessels of the brain, and to an exactly corresponding extent more must be held by the veins. From the situation of the veins, as compared with the capillaries, there follows a compression of the brain directed from the external to the internal parts. Such compression, raised to a certain amount, is the physical concomitant of sleep or suspended consciousness. "At each and every stage—whether the consciousness be latent or alert—the molecular motions, the blood currents, and the intra-cranial pressure or tension are all correlated to one another and to the state of the mental functions." The argument, of which this is a very general outline, is well supported by facts and reasoning, and is skilfully defended in its controverted parts against opposing views. A chapter on "Some Points in Mental Physiology" (pp. 109-36) may be referred to as more specially psychological.

Pre-Organic Evolution and the Biblical Idea of God: An Exposition and a Criticism. By CHARLES CHAPMAN, M.A., LL.D., Principal of Western College, Plymouth. Edinburgh: T. & T. Clark, 1891. Pp. xi., 304.

A defence of Theism as compatible with the Spencerian doctrine of Evolution, and even as its logical consequence. The theistic idea of God as Personality or Rational Will, it is hinted, leads further to the idea of a Revelation. Hence the title of the book, though the argument is exclusively philosophical. The author accepts evolution in its cosmical sense, as having a long series of stages prior to the development of organic forms, and makes little objection on the scientific side to Mr. Spencer's account of this "pre-organic evolution". His principal contention is that, if the "homogeneity" with which evolution starts be taken strictly, no change at all is possible; if, on the other hand, some degree of initial differentiation be presupposed, this amounts to the admission of an intelligent adjustment in the beginning, since the nebula, or whatever may be more primitive, contains in germ all future adjustments. The theory of Cycles may seem to offer an escape from the difficulty. If, however, we suppose the homogeneity that results from Dissolution ever to be absolute, no new Evolution is possible; and if it is never absolute, there is no evolution at all, in the sense of a "process by which all differentiation comes out of the undifferentiated". Considering directly the relation of Mr. Spencer's "Eternal Reality" to its manifestations, the author argues that "Intelligence in the manifestations means Intelligence in the Cause, *i.e.*, the Power implied in Cause is a Rational Will". Although the argument is for the most part based on Mr. Spencer's theory of Inorganic Evolution taken separately, the author is careful to point out that this does not constitute the whole doctrine. In some remarks, extending over pp. 50-3, he does justice to the distinction between Mr. Spencer's system with its view of con-

sciousness "as a direct manifestation of the One Reality, radically distinguished as phenomenon from all else in the world," and the Materialism which regards it as "direct outcome of the phenomena of force in form of molecular motion in the brain". Having arrived at this understanding, however, he dismisses it in dealing with phenomenal evolution, and considers almost exclusively the objective side of the process. For this reason his theism is not brought quite so closely as it might have been into contact with the philosophic as distinguished from the scientific expression of Mr. Spencer's doctrine.

Hegel's Logic. A Book on the Genesis of the Categories of the Mind. A Critical Exposition. By WILLIAM T. HARRIS, LL.D., U.S. Commissioner on Education. ("Griggs's Philosophical Classics," No. 8.) Chicago: S. C. Griggs & Co., 1890. Pp. xxx., 403.

An exposition of Hegel's Logic, with an autobiographical preface describing the author's long and strenuous efforts to arrive at an understanding of Hegel, or, as he puts it in one place, "to think something into" the categories of the Logic. The exposition is "critical" not merely in name; dissent from Hegel being expressed at more than one point, and reasons given for it.

Outlines of a Critical Theory of Ethics. By JOHN DEWEY, Professor of Philosophy in the University of Michigan. Ann Arbor, Michigan, U.S.A.: Register Publishing Company, 1891. Pp. viii., 253.

This book has "taken shape in connexion with class-room work," and is intended primarily as a text-book. The method is, by the comparison of "opposite one-sided views," to discover a more adequate ethical theory. Judicious references are given throughout to the literature of the subject, and passages are occasionally quoted *in extenso*. From its clearness of exposition, candour in statement and appreciation of opposing views, and vigour and independence of thought, the work ought to prove highly serviceable to students of Ethics, whether more or less advanced. Its only fault is its brevity, but the author's power of condensation is such that only beginners will be likely to complain of this. The point of view is, as readers of Prof. Dewey's *Psychology* will expect, in the main that of the English Hegelians. Acknowledgment of indebtedness is made, however, not only to such writers as Green, Mr. Bradley and Prof. Caird, but also to Mr. Spencer, Mr. Leslie Stephen, and Mr. Alexander. References to the latter representatives of evolutionary ethics are no less frequent and appreciative than to the transcendentalists above-mentioned. To Hegel himself Prof. Dewey acknowledges his great obligation in his treatment of the "ethical world". At the same time, the book is offered as "an independent contribution to ethical science"; and in several important points of theory, as always in the mode of statement, the author must be credited with originality. This is especially true of his account of Moral Progress, of Desire as "ideal activity in contrast with actual possession," of moral rules as "tools of analysis," of an actual "situation," of the relations of Duty and Desire, of moral "badness," and of the ethical value of Science and Art. The present discussion of these points will repay careful study and provoke further reflexion; a more detailed treatment of the whole subject would be welcome. The work is divided into three parts: (i.) Fundamental Ethical Notions, *viz.*, The Good, the Idea of Obligation, and the Idea of Freedom; (ii.) The Ethical World; (iii.) The Moral Life of the Individual, including the formation and growth of Ideals, the Moral Struggle or the Realising of Ideals, and Realised Morality or the Virtues.

Mechanism and Personality: An Outline of Philosophy in the light of the latest Scientific Research. By FRANCIS A. SHOUP, D.D., Professor of Analytical Physics, University of the South. Boston, U.S.A.: Ginn & Co., 1891. Pp. xiv., 343.

An attempt "to meet the growing inquiry as to what has become of metaphysic in the glare of the scientific thought of the day". The author is thoroughly abreast of the latest advances in physical science; his "metaphysic is, in the main, that of Lotze, or, perhaps better, the Lotzian phase of Kant". The work is popular in the best sense, admirably clear, without sacrificing thoroughness to clearness. The scientific part is, as might be expected, the most successful; but the writer has thought carefully and independently upon metaphysical questions. The science and the metaphysic of the book are not brought into as close a relation as might be; it contains, for instance, a great deal of good psychology the speculative bearing of which does not appear. Nor is the conception of Personality, whose central importance is throughout emphasised, determined with sufficient definiteness, whether as respects its human or divine side. What is reached is rather a psychical than a strictly *personal* view of the universe. Special attention may be called to chs. xxiv. and xxv., dealing respectively with the "construction of Matter" (from the point of view of Physics), and with the question of the "exactness" of mathematical truth.

Les Idéologues. Essai sur l'Histoire des Idées et des Théories scientifiques, philosophiques, religieuses, &c., en France depuis, 1789. Par Fr. PICAVET, Docteur ès lettres, &c. Paris: F. Alcan, 1891. Pp. xii., 628.

This is a piece of work which it ought not to have been left to a scholar at this time of day first to take seriously in hand. There is compensation, however, in the fact that it has been reserved for an inquirer at once so able, so sympathetic, and so untiring as M. Picavet. "The Ideologists," from their influence upon Thomas Brown, James Mill, &c., as well as in regard to the English inspiration of much of their own thought, concern the English student of the history of philosophy hardly less than the French. M. Picavet's elaborate and remarkable work is in every way to be welcomed. Critical Notice will follow.

L'Année Philosophique. Publiée sous la direction de F. PILLON, Ancien rédacteur de la *Critique Philosophique.* Première Année.—1890. Paris: F. Alcan, 1891. Pp. 356.

This is the first volume of an annual review intended to take the place of the *Critique Philosophique*, as announced on its discontinuance a little over a year ago (see MIND, xv. 151). The contents are:—(1) An article by M. Renouvier "On the agreement of the phenomenist method with the doctrines of creation and of the reality of nature" (pp. 1-41); (2) an article by M. Pillon on "The first Cartesian proof of the existence of God, and the criticism of the infinite" (pp. 43-190); (3) a study of Guyau's æsthetic doctrine and general estimate of him as a philosopher, by M. Dauriac (pp. 191-225); and (4) an extensive "French philosophical bibliography for the year 1890," by M. Pillon (pp. 227-352), the books noticed being classified under the heads of "Metaphysics and Psychology," "Ethics and Religious Philosophy," "Philosophy of History and Sociology," "History of Philosophy". All the divisions are very full of matter. The two articles are both concerned with the phenomenist method in its relation to the main speculative positions of the "criticist"

metaphysic. M. Renouvier sets forth, not the ethical motives that justify belief in Kant's "postulates of the practical reason," but the intellectual form that must be given to the postulates according to that principle of phenomenism which replaces the notion of "substance" by the notion of "law". First, he contends that the "substantialist" doctrine really excludes creation and all permanent distinctions of individuality, and that this appears historically. To avoid the logical necessity of pantheism, the conception of "substance" as metaphysical reality must be wholly got rid of. It has, in fact, been dispelled by the criticism of English psychological philosophers; and in the rational theory of science the conception of law has now wholly taken its place. This substitution in no way affects the reality of things for science; while, in metaphysics, it leaves a place for creation, for freedom, and for the permanence of individuality, at least as intellectual possibilities. According to the phenomenist doctrine, there is only one permissible use of the notion of "substance," *viz.*, as an aid to the imagination. When it is employed in this way, not only "atoms" but "monads" may be admitted. In connexion with this last point there is an interesting discussion of the monadism and pre-established harmony of Leibniz; both of which doctrines, M. Renouvier contends, may be interpreted consistently with phenomenism. If the phenomenism of Leibniz's real doctrine was not perceived in his own time or for long after, this was owing to his manner of "accommodating" his expressions to the doctrine of anyone with whom he might be in correspondence, and in particular to the speech of scholastic theologians. Upon Leibniz M. Pillon also has much to say in the article with which he continues the exposition of the intellectual opposition between phenomenism and substantialism. His starting-point is Descartes' argument from the idea of a perfect being to the real existence of a perfect being as the efficient cause of the idea. The quantitative idea of infinity and the qualitive idea of perfection, M. Pillon shows, are, in the argument, combined; and its intellectual basis is the maxim that the greater—the notion of an infinite being—cannot be produced by the less—by a merely finite substance, such as the individual human soul. The criticisms passed upon the argument in Descartes' own time and by Leibniz are reviewed, with the result that a near approach was made by more than one critic to demonstrating the logical impossibility of the "actual infinite number," and, therefore, of all actual infinite magnitude. Descartes himself believed in an actual or realised infinity of space or of the world. Though he called it an "indefinite" to distinguish it from the infinity of God, it was, in fact, from geometrical infinity that he formed the idea of a metaphysical "infinite". In general, spatial "intuitions" tend to associate themselves with all concepts, because their peculiar appearance of intelligibility seems to make the concepts intelligible. This happens, for instance, with the concept of time. By an effort of analytical thought, however, the non-spatial concept may always be set free from the associated intuition—the idea of qualitative perfection, for example, from the idea of the mathematical infinite. For modern phenomenist criticism, the idea of the mathematical infinite, except in the sense of a mere indefinite possibility of accumulating numbers and magnitudes, is self-contradictory. This infinite in mere "potency" is at once incompatible with the real infinite, which it expels from mathematics, and with the perfect, by which it is in turn excluded from qualitative reference, since perfection in any quality supposes the actual attainment of an end. The idea of the perfect involves no contradiction; but this mere absence of contradiction does not enable us to prove by the Cartesian method that the perfect

exists. The Cartesian argument loses its appearance of force as soon as the mathematical element in it has been separated from the rest; and even its apparent force is derived from a conception of cause that modern philosophy has banished. Causation being viewed simply as succession of phenomena according to law, there is no possibility of inferring the nature of an efficient cause from the nature of the effect.

Psychologie de l'Idiot et de l'Imbécile. Par Le Dr. Paul Sollier, Ancien interne des hôpitaux, Conservateur du Musée de Bicêtre. Avec 12 planches hors texte. Paris: F. Alcan, 1891. Pp. iii., 276.

This is a very readable and instructive account of the general psychological characteristics of idiots and imbeciles; the two classes being defined respectively as the mentally defective and the mentally aberrant from birth or from an early age. All alike are regarded as, properly speaking, abnormal. Idiocy is not merely arrested development, but is a chronic cerebral disease characterised by troubles of the mental functions, and deriving its special character only from the early period at which it manifests itself (p. 10). The non-development of faculties that constitutes idiocy on its psychological side must be traced, in the author's view, to defect or absence of attention. By attention is meant primarily "spontaneous attention"; this being the necessary condition of the voluntary form. Attention in general is an affective state setting in action the motor power (p. 67). M. Sollier does not omit an account of defects of actual sensation in idiots; absence of attention, he sees, may sometimes be traced to these defects. He contends, however, that frequently the sense is present and the power of attention absent; an exceptional impression may at length call into activity a sense that had hitherto given no signs of its presence. When the senses are present, and fairly normal, it is absence of the power of attention that makes impossible almost all development of higher intellectual powers. Two preliminary chapters, accordingly, are followed by two on Sense and Attention. Instincts (v.) and Sentiments (vi.) are next considered; then Language (vii.) and "Intelligence, properly so-called"—especially the power of abstracting and generalising (viii.); lastly "Will, Personality, and Responsibility" (ix.). The more detailed classification of types accepted by M. Sollier is into the three following:—(1) absolute idiocy, (2) simple idiocy, (3) imbecility. In accordance with his own psychological principle their characteristics are defined as:—(1) complete absence and impossibility of attention, (2) feebleness and difficulty of attention, (3) instability of attention. The most prominent distinction in the book is the contrast between "idiocy" and "imbecility". This the author regards as marking not merely two degrees of the same affection, but two wholly different types. The culminating opposition of the two types is a broad contrast of moral character. In general, the idiot is "extra-social," the imbecile "anti-social" (and to be guarded against). The first (if not of the lowest type) has a rudimentary moral sense, and can be trained to a kind of automatic activity; the second has a perverted moral sense, and is hardly at all susceptible of training. This opposition is very well connected by the author with the varied contrasts in the elements of the two characters. His many detailed observations may be commended to the attention of readers.

De la Justice Pénale. Etude Philosophique sur le Droit de punir. Par Isidore Maus, Avocat à la cour d'appel de Bruxelles, Docteur en Droit et en Philosophie, Membre de la Société Philosophique de Louvain. Paris: F. Alcan, 1891. Pp. 228.

The motive of this book is to defend philosophically the conception of penal justice attacked by writers of the Italian Criminological School; and at the same time to show that the real results of their investigations can be incorporated in the old juridical doctrine. This doctrine, as the author shows, has its root in the Scholastic philosophy. The "social power" once sought from the doctors of the Church "the directing principles of its government". Hence, to know "the sap on which penal law still lives to-day," we must go to the philosophy in which those principles were formulated. The chief representative of that philosophy, and its culminating point, is Thomas Aquinas. And, although the theory of punishment is treated by him rather from the "moral" or individual than from the "social" point of view, still, by analogical application of his principles, a theory of punishment in relation to the present needs of society may be constructed. A construction of this kind is the substance of the book. Penal justice, in the author's view, must be held to consist essentially in "reparation or satisfaction" for a violation of order proceeding from a person in full possession of "free-will". Consideration of "degrees of responsibility," according to the degree in which free-will is "attenuated," is part of the duty of those who have to administer the law. (At the same time, law makes no claim on internal dispositions, but is satisfied with the external action.) For various reasons, a penalty that comes short of strict "objective" justice may be imposed, but not one that is in excess of it. The execution of justice has for one of its effects to prevent the crime that would be committed if there were no punishment; and the penal law ought to be adapted to this end as well as to its direct end of realising justice; but when, through irresponsibility of the agent, the penal law becomes inapplicable, other social means of prevention (not discussed by the author more particularly) are to be resorted to. Modern civilisation has caused an increase in the number of "irresponsible criminals"—that is, persons who commit crimes and yet cannot justly be punished. There are states of the nervous system, due to the exciting action of modern life, that result in perversities of conduct not to be attributed to free-will. By recognising that such perversities are not properly punishable, and can only be the subject of non-penal legislation, the older jurisprudence may incorporate all the facts brought to light by the Criminological School. Between absolute irresponsibility and full responsibility many intermediate degrees not formerly thought of are to be recognised; and penal justice must allow for them. The author's argument will, as he himself sees, be taken as a verification of all that the writers of the new school—especially Garofalo (see MIND, xiii. 450)—have said as to the tendency of "the old juristic maxims" when modified by ideas as to "irresistible impulse" and the like. His position is interesting as revealing an intellectual cause of that weakening of penal sanctions—more particularly on the Continent—which the Italian writers regard as a danger. Of course the theory of justice worked out by M. Maus need not be rejected as valueless in all its parts. We should rather be prepared to find that the systematised scholastic doctrine contains elements not sufficiently recognised by writers who are less occupied with expounding a complete theory than with enforcing new ideas of their own. An example in point is the word "responsibility," which the "new school" need not dismiss from its vocabulary, as it is inclined to do. It could give the term a very good meaning according to its own ideas; and, as was pointed out in a notice of M. Joly's study on Crime (MIND, xiv. 456), even now it effectively retains the thing.

Essai sur le Fondement métaphysique de la Morale. Par F. Rauh, Docteur ès lettres. Paris: F. Alcan, 1890. Pp. 259.

The present essay would perhaps be better described as "on the ethical foundation of metaphysics" than by its actual title; its aim being to show that the true ground of metaphysical certainty is the "moral act". This is what Kant partially established, and only failed to establish completely because he was still haunted by the "phantom of geometrical certainty" from the older metaphysics. Continuing to regard this as the ideal type of intellectual truth, he did not find it realised in his own doctrine of the Practical Reason; over his conclusions there was the constant menace of another possible solution. Geometrical certainty, however, is not really the type of philosophical certainty. Ultimately all speculative truth finds its guarantee in "the moral act". The certainty given by this is beyond the scope of any comparison with other and lower kinds of truth. It is the culmination of all metaphysical systems. To this position the author finds himself led in a gradual ascent from "Naturalistic Ethics" (Darwin, Spencer) and "Systems of conciliation and transition" (Guyau, Fouillée, Wundt), through "Intellectualism or Geometrism" (Spinoza) and "Finalism" (Leibniz), to "Moralism" (Kant); this last system being a preparation for the definitive "System of Liberty". His own doctrine, he tells us, is inspired especially by the works of MM. Boutroux, Lachelier, and Ravaisson. The doctrine is called a "system of liberty" because it transcends the "geometrical" ideal by taking its start from "contingency," which is found to be an ultimate element eluding all intellectual apprehension. The content of the system is furnished by the Kantian postulates of God and Immortality—interpreted as largely as possible.

Augustin Chaboseau. *Essai sur la Philosophie Bouddhique.* Paris: Georges Carré, 1891. Pp. 251.

The aim of the present Essay is to convey an idea of the spirit of Buddhistic philosophy; only so much history and reference to sources being given as is necessary for that end. First, however, there is an account of the legend of Sakya-Muni, of Buddhism as a religion, and of Buddhist literature. Buddhistic philosophy is then compared with the other Indian philosophies—such as the Sânkhya and the Vedânta—that may be supposed to have sprung up as part of the same movement of opposition to Brahmanism. In its distinction from these, it owed its fortune to its popular character; but, essentially, it is a philosophy rather than a religion. The general historical and critical outline is disposed of in four chapters (pp. 21-108). Chapters v.-xx. then expound the system. The last two chapters (pp. 239-251) discuss "Buddhism in Europe" and "The Future of Buddhism". The exposition has sometimes the appearance of a sympathetic recast of the doctrine in conformity with modern cosmological and evolutionary theories, but the author is not without a defence of his mode of interpretation. In his view the morality of Buddhism is the purest and noblest, and its philosophy the most profound and complete, ever attained. Buddhistic philosophy, reduced to its elements, contains in germ a reconciliation of all the phases of thought and belief that man has hitherto traversed.

Histoire de la Psychologie des Grecs. Par A.-Ed. Chaignet, Recteur de l'Académie de Poitiers, Correspondant de l'Institut. Tome II.—*La Psychologie des Stoïciens, des Epicuriens et des Sceptiques.* Tome III.—*La Psychologie de la Nouvelle Académie et des Écoles éclectiques.* Paris: Hachette et Cie, 1889, 1890. Pp. 528; 486.

The first volume of M. Chaignet's *History of Greek Psychology* was noticed in MIND, xiii. 131. The present two volumes deal with the post-Aristotelian systems, and bring the history down to the beginning of the Neo-Platonist movement; the system of Neo-Platonism being left for a fourth and last volume. A feature of M. Chaignet's work is, as before, the very full treatment of the Scholarchs, about whom all attainable information seems to have been collected. The exposition includes much more than an account of the purely psychological positions of the various schools and teachers. The work is, in fact, a history of psychology in relation to general philosophy rather than as a special science. In the opening pages on Stoicism, the characteristics of the movement of Greek philosophy after the death of Aristotle are thus summarised:—"Taste for erudition; leaning to oratorical forms; establishment of schools as concentrated organisms, whose rivalries and struggles do not prevent reciprocal influence; tendency of philosophy to constitute itself a social force; and, above all, the pre-eminence, greater and greater in the totality of science, of psychology considered as the knowledge of man himself". Each school sought a psychological basis for its metaphysic, and at the same time justified its psychological positions by deduction from metaphysical principles. This is true in particular of Stoicism and Epicureanism. The naturalism of the Stoic and Epicurean theories of the universe alike, and of the resulting psychological views, is well brought out by M. Chaignet; but, against Zeller and recent expositors, he contends that the empirical character of the Stoic theory of knowledge has been exaggerated. The substance of his argument is that the Stoics admitted "innate ideas," at least in the form of "germs" and "potencies"—the only form in which their existence has been seriously maintained; hence their theory of knowledge must be regarded as rationalistic. The author, however, does not contend for a similar view of the Epicurean theory of knowledge, although he is able to show that the Epicureans also recognised "anticipations" of experience, "primitive notions," and so forth. In the detail of the two doctrines the contrast that has impressed itself on him is that of logical method. The elaboration of formal logic by the Stoics is compared with the neglect of it by the Epicureans; while, on the other side, the presence of distinct suggestions towards an inductive logic in fragments of Epicurean writings is noted as a point of superiority over the "scholasticism" of the Stoics. Attention may be drawn to a comparison of the Stoical theory of generation with Weismann's doctrine of the "continuity of the germ-plasma" (ii. 44-5). Dr. L. Stein's view of the *συγκατάθεσις* (see MIND, xiii. 303) is discussed at length (ii. 117-21), with the result that rather too much has been made of the voluntary character of the act of assent. The central doctrine of Epicurus is found to be free-will. The place of this doctrine in the Epicurean system illustrates the general relations of psychology and metaphysics; for, while it is of psychological origin, it has its metaphysical ground and justification in the theory of the *clinamen*. That theory the author seeks to vindicate against objections such as were made by the ancient opponents of Epicureanism. He does not fail to note points in the detail of the Epicurean psychology—such as the theory of the origin of language (ii. 351-2) and the view of progress (ii. 427-8, n. 4)—which have special interest in relation to modern theories. The Sceptical doctrine, which is next considered, is regarded as being, on its better side, the antecedent of the modern "criticism of reason". "For the Sceptics, the only problem of philosophy is a psychological problem, and the only problem of psychology they try to solve is the problem of knowledge." Most of their psychology was not

very original; but they introduced the distinction between knowledge of phenomena as such—which they generally recognised—and assent to them as true representations of things. It is observed (ii. 480-1) that the Sceptics showed the influence of their intellectual surroundings in their identification of happiness with a state of untroubled calm (ἀταραξία), when they maintained that such a state was the result of their own intellectual principle of non-assent to representations. The modern "law of relativity" was stated by them in more than one of its forms, but they had no positive theory of science. Inductive and deductive reasoning were for them equally illusory. Recognising the "commemorative sign" as necessary for the purposes of daily life, they refused to allow of anything that can be called a "demonstrative sign". Even among the pure Sceptics or Pyrrhonists there was, however, a difference between the more radical and the more moderate. The Scepticism of the New Academy was altogether a "mitigated scepticism". To this M. Chaignet proceeds in vol. iii., describing the changes introduced into the Academy from its sceptical reaction (with Arcesilas and Carneades) against dogmatism until its return (with Philo of Larissa and Antiochus) to the principles of (more or less eclectic) Platonism. This takes up pp. 1-73. The rest of the volume is devoted to (1) the eclectic Platonists, (2) the eclectic Peripatetics, (3) the eclectic Pythagoreans, (4) Galen, (5) the Jewish school (ending with Philo). It was in the Platonic school, always marked by the Socratic spirit of free inquiry, M. Chaignet contends, that each new movement appropriate to the time first sprang up. As the views of different thinkers were set in opposition to one another, and thought inclined to scepticism, a sceptical tendency developed in the Academy. Then, when this tendency had exhausted itself, and truth began to seem attainable by judicious selection from the positions of different thinkers, it was again the Academy that first gave expression to the new "eclectic" turn of philosophic thought. From about the time of Augustus to the rise of the Alexandrian school the eclectic tendency was everywhere predominant. The system of the Alexandrian school itself, though proceeding from a basis of erudition, is not a form of eclecticism, but is a powerful and important new construction, the last original effort of the Greek genius. In M. Chaignet's chapters dealing with the Eclectics of all schools the preparatory stages of the new doctrine are well indicated. A struggle is shown to be continually going on between Platonism, Peripateticism, and Stoic naturalism. The Eclectics vainly attempt to fuse all three, sometimes inclining more to one and sometimes to another principle. In the meantime theosophic ideas from the East are finding admission. An intrinsic development of Greek philosophy is also tending in the same direction. This shows itself especially in the theory of the soul. The conflict between naturalistic and spiritualistic views may be seen in the case of an individual observer and thinker like Galen. Galen, in spite of his independent views on some points, and in particular with respect to the relations of soul and organism, is to be classed as a psychological eclectic. Through his occupation with physiology, along with his wide knowledge of philosophical systems, the problem of the nature (material or immaterial) of the soul comes forward in him with special distinctness. The form taken by the problem is, whether the Pneuma (still regarded as material) is the soul itself, or only an organ of it; but no definitive solution is arrived at. Above all others, the Jewish thinkers are eclectic; for their whole problem is to reconcile their religious convictions with Greek philosophy. In a special way also they are psychological. "Their philosophy is but a psychology, and that psychology is a theology." What Philo seeks to know is "man, who is

essentially a spirit, in his relations with God, Who is Spirit itself". How this effort found expression in Philo's selection and combination of doctrines from the Greek schools is abundantly shown (iii. 412-484). The relation of his eclectic system to Christian theology, as well as to the new movement of Greek thought, is in conclusion briefly pointed out.

Ueber die Grundlagen der Erkenntnis in den exacten Wissenschaften. Von Paul du Bois-Reymond. Nach einer hinterlassenen Handschrift. Mit einem Bildnis des Verfassers. Tübingen: H. Laupp, 1890. Pp. vii., 130.

This is a posthumous work edited from a MS. that had not been finally put into shape by the author. The editor, Dr. Guido Hauck, appears to have done his work very well, and, as he says, whatever may be lacking in form—to which the author was accustomed to pay great attention—the thought is perfectly clear. The book may be described as an exhibition of the nature and limitations of mechanical explanation in science, chiefly worked out by direct reference to physical conceptions, but with occasional hints at psychological treatment. There are, the author premises, in all three directions of scientific investigation. The aim of the first is to formulate the empirical laws of phenomena. The aim of the second is a mechanical synthesis, or reconstruction of phenomena from "elementary mechanisms" placed at their base. This is the direction of "exact science". Lastly, there is a "meta-mechanical" direction of thought, which makes the attempt to attain understanding of the elementary mechanisms themselves in their real nature. All that can come of this last direction, the author seems to say, is the conviction that an "extra-phenomenal" real world exists, but that its nature is for ever unknowable. The argument to this effect is placed, however, in a somewhat detached position at the end of the book, and is not the most characteristic result of the author's thought. The really central and characteristic part of the book begins with an examination of the rival hypotheses of continuity or atomic constitution of bodies. Continuity having been rejected as not capable of yielding satisfactory mechanical syntheses, the nature of the atom is discussed. Is it to be taken as an unextended centre of force or as an extended corpuscle? Before this question can be solved the other has to be raised, whether force itself, in ultimate mechanical explanation, is to be viewed as acting "at a distance," or whether, on the contrary, action at a distance can be explained mechanically by means of stresses, strains, and impacts. There follows a very instructive review, first, of the theories that have been imagined in order to bring gravitation under laws of the communication of motion by contact, and then of the mechanical syntheses attempted, successfully or otherwise, for the various physical forces. The result of the whole is that action at a distance remains an irreducible element of every possible mechanical synthesis. Attempts to resolve gravitation into something more general have never yet been successful; and even if they ever were to be, we should still be left with atomic or corpuscular forces which can only be conceived as acting between points, or between bodies not in absolute contact. As a preliminary to further theorising upon the nature of atoms or corpuscles, a mathematical doctrine of "limits" is set forth. The distinction is drawn between (1) a last term of a series of representations that is of the same kind as all the preceding terms, (2) a last term that is of a different kind from the preceding terms but is still representable, and (3) a last term that is not representable at all. An example of the first kind of limit is a regular triangle as the last term

of a series of triangles with continually diminishing irregularity. Of the second kind, an example is a circle as the term of a series of inscribed polygons with continual addition to the number of sides. Examples of the third kind of limit are (*a*) absolute exactitude of a straight line, and (*b*) infinity or zero of length as terms of the production or shortening of a line. In the theory of the atom there are limits similar to these last. "Absolute" qualities (*e.g.*, absolute rigidity) are as unrepresentable as perfect mathematical exactitude, and are posited as unattainable last terms of a series. For limits of this kind, whether mathematical or physical, there are two types of theory—the "idealistic" and the "empirical". The "idealistic" theory asserts the actual existence of the limit, in spite of its not being representable. The "empirical" theory explains the mathematical limit as simply a convenient word for stating briefly that by going on with a process of addition or diminution as long as we like we can come as near as we like to the unrepresentable term of the process. In physics, correspondingly, it refuses to admit that any quality really exists in an "absolute" degree, and contents itself with assuming in the atom such an increase or diminution, for example, of rigidity or extension that the assertion of their "absolute" existence or non-existence yields practically true results. There is no doubt that, for the mathematician, the "empirical" theory is quite sufficient, though there will probably always be some mathematical "idealists". In physics also the "empirical" theory, properly worked out, might suffice; but here the general disposition will be to take the "idealistic" view. For the physical "idealist" the ultimate element of matter will not be merely a "corpuscle," but a strict "atom," perfectly unextended. Denuded of all corpuscular character, the atom becomes simply a centre of force, which can now only be force acting at a distance. Force acting at a distance and matter are now identical. To "force" the contrast of "idealism" and "empiricism" is not applicable. Central force, being (as has been already seen) irreducible to anything else, is for science an ultimate fact, or a real "absolute"; and, by the "idealistic" theory of the atom, we are left with it as the only "absolute". The nerve of the difficulty as to "action at a distance" has been in a manner cut by the reduction of every other kind of mechanism to this. For science, all that is necessary is that it should be capable—as it has been found to be—of indefinite application in the synthetic reconstruction of phenomena.

Der moderne Mensch. Versuche über Lebensführung. Von B. Carneri. Bonn: Emil Strauss, 1891. Pp. v., 186.

In an earlier volume, noticed in Mind, xii. 147, the author developed his general ethical and philosophical views, which here again find incidental expression. The aim of the present series of essays, however, is more directly practical. "The modern man" is regarded from the point of view of the author's ethical ideal, and from this point of view various topics belonging to the conduct of life are considered in the light of experience and with reference to the needs of the time. A subject to which much attention is devoted is modern education. Here the author's position is that the family lays the foundation, the school continues, and the State completes. The object should be to give "an ideal direction to individualism," or, in other words, to form the sense for "a noble happiness". The watchword is not "altruism," regarded as the suppression of "egoism," but rather the incorporation of impersonal ends in the personal character. Such a development of individuality is only possible in a well-ordered State. The ancient and modern conception

of a supreme political order is, therefore, to be upheld against mediæval or communistic ideals that would place a Church above the State or disperse the State into a vague "society". Besides the author's general positions, there is much that is worth attention in his remarks on subjects of the day.

Arthur Schopenhauers *Werke.* Mit Einleitungen, erläuternden Anmerkungen und einer biographisch-historischen Charakteristik Schopenhauers. In Auswahl herausgegeben von Dr. Moritz Brasch. Mit dem Portrait Schopenhauers. 2 Bände. Leipzig: Gustav Fock, 1891. Pp. xxxii., 740; 781.

This is a carefully conceived, and in the result a highly successful, attempt to bring together, in handy and cheap form, all that is of permanent value in the manifold writings of Schopenhauer. Dr. Brasch is a thoroughly competent editor, both by reason of his knowledge of the field of philosophy generally, and by the position of independent yet not unsympathetic appreciation which he takes up in regard to the philosopher of Frankfort. The edition gives at full length the smaller works, *Fourfold Root*, *On Will in Nature*, and *The Two Fundamental Problems of Ethic;* ordering them by the side of large extracts from *The World as Will and Idea* and the *Parálipomena u. Parerga* within one comprehensive scheme. The general idea is to make division of Schopenhauer's whole philosophical performance into writings concerned with (1) Doctrine of Knowledge, Metaphysic, and Philosophy of Nature, (2) Æsthetic, Ethic, Philosophy of Religion, and Practical Wisdom; the divisions corresponding with the two volumes of the edition. But the idea is carried out in no mechanical fashion. Thus beginning is made in vol. i. (before the *Fourfold Root*) with some 60 pp. of methodological or related matter extracted from the larger works; and the ordering adopted throughout is excellently devised to bring out the whole compass of Schopenhauer's *positive* thought. A general introduction by the editor on the philosopher's life and works (pp. xi.-xxxii.) and shorter special introductions to the main sections, besides occasional footnotes, add much to the value of the two volumes. One must only regret that Dr. Brasch has followed the curiously perverse habit of so many of his learned fellow-countrymen, in not providing an Index at the end.

Die Freiheit des Willens, die Moral und das Übel. Eine philosophische Abhandlung von Anton Ganser. Graz: Leuschner & Lubensky, 1891. Pp. 48.

"Every creature is in some degree free"; but there is no free-will in the sense of a will separate from intelligence. Freedom is an ideal which is realised more and more as creatures become more conscious of their own being. There is no absolute "evil". All phenomena have a single source, *viz.*, the intelligent will, which is the world-principle. The innumerable Egos that emerge in space and time are representatives of the one Ego, which would exist if they did not. The creation of a multiplicity of individual beings by the unitary world-principle is a logical and moral necessity. Unless creation is shown to be thus necessary, morality has no basis on which it can be known and taught. Schopenhauer's pessimistic principle, for example, can furnish no ground even for pity as a practical virtue. All virtues—compassion among them—are the carrying over to others of our "self-love"; and self-love rests on the feeling of the possibility and justification of a satisfactory existence for

ourselves; from which follows the similar right of others. "Knowledge of the internally justified being of an individual" rests again on knowledge of the world-principle. Only if this is known to be logical and moral can self-love in its turn be justified.

Das Wesen der Elektrizität und des Magnetismus auf Grund eines einheitlichen Substanzbegriffes. Von J. G. Vogt. I. Theil. Die *Konstellationen* der einheitlichen Substanz als die Träger der physikalischen Kraftäusserung. Mit erklärenden Holzschnitten. Leipzig: Ernst Wiest, 1891. Pp. vi., 472.

In this volume, which prepares the ground for a general theory of Electricity and Magnetism (to be developed in a second Part) there is a "Methodological Introduction" (pp. 1-66) of some philosophical interest. The author, in accordance with his doctrine, set forth in an earlier volume noticed in Mind, xii. 634, would express all activities in nature mechanically; and, as he here proceeds to explain, would have all physical "expressions of force" regarded as different "manifestations" of a single "fundamental mode of work" of the "unitary substance". The "unitary absolute world-substance" is to be defined objectively. All real activity is activity of "objective being"; there is in reality no "subjective occurrence"; consciousness is a "passive mirror" in which all that happens in the world reflects itself. "Absolute realism" is the only way out of the dualism of "mind and substance," "subject and object," &c. Assert that the world reflects itself in man, and deny that there is any spiritual principle as "metaphysical essence"—and all is clear. According to this view, there is only one logic, "the logic of real occurrence". To penetrate speculatively into the real process of things we must therefore follow logic, in which that process is mirrored. A condition of the truth of any speculation is "representability" (*Vorstellbarkeit*). By this condition all action at a distance is excluded. The physicist, in the theory of electricity and magnetism as elsewhere, must seek for a "representable" explanation; and this must be sought in some doctrine of the absolute continuity of the actions of a single homogeneous substance.

Inleiding tot de Wijsbegeerte, door Dr. J. P. N. Land, Hoogleeraar te Leiden. 'S-Gravenhage, 1889, Pp. xi., 486. [*Introduction to Philosophy*, by Dr. J. P. N. Land, Professor of Philosophy at Leyden.]

Prof. Land is recognised as a scholar of singularly varied and thorough equipment, and of wide and vital philosophic culture. His *Hebrew Grammar*, his valuable Syriac publications, and his remarkable *Essay on Arabic Music*, indicate his mastery in a philological and critical department that is rarely cultivated now by philosophical experts. His article in Mind on "Philosophy in the Dutch Universities" (Jan., 1878), full of lucid and interesting information as it was, must have turned the attention of many English readers more directly to the philosophical achievements and efforts of his countrymen. The historical survey of the article was complete, and its judgment conscientious even to severity; but its outlook was somewhat discouraging, in view of the new University Regulations of 1876. All the more interesting is it to find evidence of Dr. Land's continued philosophical activity and the proof of living philosophical interest at Leyden in this careful and thoughtful *Introduction to Philosophy*. Written as an introductory text-book, it is well fitted to guide the young student in his effort to master the initial difficulties of philosophical study, and to reach the

latest points of view occupied in the cultivation of philosophical science. As Dutch books are not much read amongst us, it may be allowed to indicate briefly the contents of Prof. Land's *Introduction*. It is divided into six sections—The Task of Philosophy; Experience; Hypothesis; Reasoning; The Way of Philosophy; Philosophy and the Civilised Life. The arrangement explains itself. Under the Task of Philosophy, the distinguished author elucidates in simple and untechnical language the following topics:—What is Philosophy? the striving after wisdom; knowing and understanding; the sciences and philosophy; theory of the world; theory of knowledge; the theory of ideas; division of philosophy; personal and normal philosophy; ancillary philosophy; truth; truth and the time; appearance and probability; philosophy and the personal life. Under the rubric of Experience are discussed the derivation of our ideas; sensible impressions; perceiving; representation and mind; memory and reminiscence; synthesis and analysis; internal perception; experience the work of the mind; the standpoint of the mind; the truth of our knowledge; reality or postulate of the mind; the mind over-against experience. The notion of Hypothesis is treated under the headings:—things and properties; causation and design; mechanism and diathesis (collocation); the finding of hypotheses; latent and apparent ideas; latent thinking and the unregulated movement of thought: the worth of consciousness; the use of hypotheses; metaphysics. The fourth section presents a clear and concise sketch of Formal Logic under the titles:—inference; constantness of inference; logical connexion; abstraction; concepts; truth of concepts; definition; division; categorical judgments; opposition of judgments; the object of the judgment; hypothetical judgments and reasonings; the syllogism; disjunctive judgments; grounds of certainty. By the Way of Philosophy Prof. Land designates the question of Scientific Method, which is explicated under:—end and means; divergence of doctrines; positivist considerations; critical philosophy; induction and deduction; complete induction; generalisation of facts; investigation of causal connexion; establishment of empirical laws; discovery of rational laws; significance of mathematics; determination of probability; attribution of activity; methodic precautions; progress in philosophy. The concluding section exhibits the practical and living interest of Philosophy by expounding its relations to civilised life or culture in eight excellent chapters dealing with the nature and state of civilisation; the religious life; the moral life; right and the state; beauty and art; language; history; and the contemplative and the active life. The critical standpoint and general scope of the work will be apparent. It need hardly be said that it is founded on full knowledge of the latest philosophical literature of Germany, France, and England, and that it is sustained throughout by mature and sober thinking. The author is too much in sympathy with the difficulties of the special philosophical problems of the time, and too completely at one with the practical and cautious habits of thought and the sound sense of his countrymen, to indulge in abstract system-making or mere ingenuities of speculation. But his exposition is really systematised and pregnant throughout, and if his analyses, in view of his special purpose, are not always pressed to their deepest results, nor his criticisms carried on to their highest issues, yet they are always clear and suggestive. The book is admirably fitted to serve its purpose, and cannot fail to promote the revival of philosophical culture and learning in the land of Spinoza, and especially in the haunts of philosophy consecrated for all time by the deepest thoughts of Geulincx and Descartes.

Received also :—

E. Westermarck, *The History of Human Marriage*, Lond., Macmillan & Co., pp. xix., 644.
J. F. Nisbet, *The Insanity of Genius*, Lond., Ward & Downey, pp. xxiv., 340.
C. Calleja, *General Physiology*, Lond., Kegan Paul, Trench, & Co., pp. x., 391.
A. Young, *Sociology diagrammatically systematised*, Lond., Houlston & Sons, pp. 174.
H. Mackenzie, *Evolution illuminating the Bible*, Lond., Simpkin, Marshall, & Co., pp. x., 393.
T. Tiptaff, *The Greenleeks Papers*, Lond., J. M. Dent., pp. 297.
J. Jastrow, *The Time-Relations of Mental Phenomena*, New York, N. D. C. Hodges, pp. 60.
P. Carus, *The Soul of Man*, Chicago, The Open Court Publishing Co., pp. xvi., 458.
T. P. Bailey, *The Development of Character*, Columbia, S.C., pp. 21.
E. Ferrière, *Les Erreurs scientifiques de la Bible*, Paris, F. Alcan, pp. 400.
F. Paulhan, *Le nouveau Mysticisme*, Paris, Alcan, pp. 203.
F. Levillain, *Hygiène des Gens nerveux*, Paris, Alcan, pp. xi., 308.
E. de Roberty, *La Philosophie du Siècle*, Paris, Alcan, pp. viii., 235.
A. Jovacchini, *La Formazione della Vita*, Lanciano, Cav. Rocco Carabba, pp. viii., 359.
G. Cesca, *Il Fenomenismo dell'Hobbes*, Padova-Verona, Fratelli Drucker, pp. 68.
W. Paszkowski, *Die Bedeutung der theologischen Vorstellungen für die Ethik*, Berlin, Mayer & Müller, pp. vi., 92.
G. Frege, *Function und Begriff*, Jena, H. Pohle, pp. 31.
H. Strasosky, *J. F. Fries als Kritiker der Kantischen Erkenntnistheorie*, Hamburg u. Leipzig, L. Voss, pp. 76.
V. Cathrein, *Moralphilosophie*, ii., Freiburg i. B., Herder, pp. xiv., 633.

Notice will follow.

VII.—FOREIGN PERIODICALS.

The American Journal of Psychology.—Vol. iii., No. 4. C. P. Bancroft—Automatic Muscular Movements among the Insane. H. Nichols—On the Psychology of Time. [One of the comprehensive historico-critical surveys of special questions to which the *Am. Jour.* is usefully devoting large space. The present study fills some 80 pp. in two parts—(1) Historical, (2) Experimental Investigations.] C. F. Hodge—On the Recovery of Stimulated Ganglion-cells. [Continuation of previous studies on Nerve-fatigue, contributed to the *Am. Jour.* in 1888-9.] Psychological Literature (Nervous System, Psychiatry, Experimental, Miscellaneous). Notes, &c. Vol. iv., No. 1. E. W. Scripture—Arithmetical Prodigies. [Gives account of the recorded cases, and seeks to furnish for the first time an approximately complete bibliography of the subject; attempts also to make psychological analysis of the special power in question and get therefrom some hints for the practical instructor in arithmetic; 59 pp.] H. Nichols—The Psychology of Time. [Follows up the author's historico-critical sketch in previous No. with a detailed account (pp. 53) of original researches of his own made at Clark University; the final outcome of the whole study being thus expressed:—"The general consensus of past and of current opinion is that time-perception must alone be accounted for within some peculiar simultaneous psychic state, and, according to most authors, by some peculiar and disparate form of consciousness, in addition to our stream of ordinary sensations and their representative images. The conclusion which" the author offers "is that the processes of our environment, of our bodily organism and of the sensations and images which correspond thereto, are in themselves, within the limits of the insoluble mystery of the existence of any physical or psychical existence at all, a sufficient explanation of time-psychology, and that time-perception cannot be explained by any single state or disparate sense, but can alone be accounted for as a *process.*"] Psychological Literature (H. Donaldson—Cerebral Localisation, and Notes on Models of the Brain. E. C. Sanford—A Laboratory Course in Physiological Psychology. G. S. Hall—Contemporary Psychologists, i. Prof. E. Zeller.)

Revue Philosophique.—An. xvi., No. 4. Ch. Richet—Qu'est-ce que la physiologie générale. ["The physiology of elements is general physiology; the physiology of apparatus and organs is special physiology." The great law of general physiology is that the chemical activity of cells is the basis of all their functions.] V. Brochard—La philosophie de Bacon. [An argument for giving Bacon a higher place than is assigned to him by recent memoirs, especially that of M. Barthélemy Saint-Hilaire. Bacon's essential idea is that, in the practice of the experimental method, negative as well as affirmative cases are to be taken account of. He is not to be regarded as a precursor of Locke in the theory of knowledge; and his conception of scientific law is not that of Mill. His view of nature was at bottom the view common to the "mechanists" of his own age. This was the interpretation of his contemporaries. His mechanical doctrine, however, had no influence on science or philosophy. He owes his place in history to that theory of the experimental method which legitimately bears his name.] Pierre Janet—Sur un cas d'aboulie et d'idées fixes (fin). [Impresses further the view that the essential factor in "aboulia" is inability to perform mental

synthesis. In the case discussed, perception (internal and external) is found to be defective precisely in the same way as movement. Except during brief intervals, the patient cannot acquire new memories, and has no imaginative representation of the future. There is doubt—not in any way metaphysical—as to the truth of external perception, which is sometimes altogether suppressed. It is, above all, the novelty of the synthesis to be made that suppresses perception. When the synthesis has once been effected in any manner it can always be repeated automatically. The force of the "fixed ideas" incident to the malady comes from weakness of the new ideas acquired at any particular moment. When these momentarily acquire strength, "fixed ideas" disappear. The weakness does not affect the senses, nor yet the memory as simple reproduction of images. What it affects is the power of founding recollections, of creating habits. It is really a diminution of that power of "adaptation" to events by which we maintain ourselves in relation with a constantly changing environment.] J. Delboeuf—Pourquoi mourons-nous? (fin). [The author's account of the origin of things is described as a "biological cosmogony". The appearance of dead or "stable" matter being explained as a result of the metamorphosis of originally living or "unstable" matter, the question remains, How has that which is destined to this metamorphosis come into the world? This "mystery," like others, is only soluble by its reduction to simple terms. The general mystery of the origin of life is that of the origin of things. What takes place in the history of things is the gradual concentration of unstable matter into higher and higher organisms — or their really living elements; for higher organisms in part consist of an "envelope" of stable matter. The organisms that remain eternally young, at least in potency, are the "reproductive organisms". "The ovary is the true depositary of the immortal propagating substance." In "multiplication by division" it has preserved the primitive mode of propagation.] Notes et Discussions (G. Sorel—Sur la géométrie non-euclidienne. J. Andrade—Les bases expérimentales de la géométrie euclidienne. A. Fouillée —La philosophie et les concours d'agrégation). Analyses, &c. Société de Psychologie Physiologique (Ch. Henry—Sur un olfactomètre). No. 5. E. de Roberty—Un point controversé de la théorie de la connaissance. [The antinomy of the "knowable" and the "unknowable" illustrates the tendency of metaphysics to extend hastily and generalise prematurely certain particular problems borrowed from science. It will resolve itself, for the special sciences, into a series of special questions, sociological, psychological, or physiological.] G. Noël—Noms et concepts. [To understand abstraction and generalisation, we must see in perception a phenomenon of activity, not of mere passive receptivity. The "idea" is the residue left in the soul by the perception of the object. If perception is an "act," the idea is a "habit". It is this habit that represents the object in a permanent manner. The "name" has for function to make the mental habit that represents the object pass into action. It addresses itself directly to the will. The images that the name evokes proceed from the action as its natural consequences, and the name cannot be understood unless they appear; but it is not from images that it receives its signification. Exclusive attention to certain characters of the object perceived or represented, if it is not the whole of abstraction, is its condition and its basis.] G. Dumas—L'association des idées dans les passions. [The association of emotional "tendencies" is only a complex form of the association of ideas, and does not differ in its mechanism from the logical associations of

reasoning. These associations, which may be called "the syllogism of reasoning," prepare and facilitate the other associations that may be called "the syllogism of passion". "Tendencies" in turn react upon ideas and reasonings, and in passion are the dominant element. The complete synthesis is performed under the supreme direction of a "tendency".] Notes et Discussions (Th. Flournoy—Activité psychique et physiologie générale. C. Piat—L'intellect actif et les idées). Analyses, &c. Rev. des Périod. No. 6. B. Bourdon—Les résultats des théories contemporaines sur l'association des idées. [Principally an attempt to reduce all forms of association to "resemblance". "Similitude of time" and "similitude of space" are to be substituted for "contiguity". Thus there are two distinct cases of resemblance—(1) as regards time and space, (2) as regards quality. The expression "association of ideas" the author would replace by "society of phenomena".] J. Payot—Comment la sensation devient idee. [Sensation is the irreducible "innate" element of the psychological life, and is an expression of the whole being of the subject. The part it plays in actual psychological life is nevertheless an almost "effaced" part. "Affective consciousness," in which sensation absorbs all the attention, scarcely exists. Between such purely affective consciousness and the reflex action in which mental processes, when they become sufficiently rapid, disappear on the other side, "intellectual consciousness" emerges. It arises out of sensation as the result of a synthesis of mental relations and representative states under which the original element of sensation disappears. This disappearance of sensation beneath "suggested relations" is most conspicuous in expectation, but takes place even in ordinary perception. This and all the higher stages of abstraction and classification attained by the aid of language are essentially a "mechanism of simplification," enabling us to deal readily for practical purposes with the impressions continually crowding in.] Notes et Discussions (J.-P. Durand (de Gros)—Qu'est-ce que la physiologie générale?). Analyses, &c. Rev. des Périod.

Rivista Italiana di Filosofia.—An. vi. 1, No. 2. L. Ferri—Della conoscenza sensitiva. [Principally historical, on perception and its distinction from sensation. The positive result is that perception is to be regarded as an operation of synthesis and the perceptive function as primordial.] S. Ferrari—Empedocle. [Introductory to an exposition of the philosophy of Empedocles. The life and the studies already made of the fragments are dealt with.] F. Cicchitti-Suriani—La pedagogia di Jacopo Stellini. N. R. d'Alfonso—Un detto d'Amleto e l'educazione dei sensi. [Hamlet's saying, "The hand of little employment hath the daintier sense," is discussed psychologically with a view to determining the range within which it is applicable to the senses generally. The conclusion as regards the education of the senses is that the two opposite extremes of no functional exercise and of excessive stimulation are to be avoided.] Bibliografia, &c. (F. H. Collins, *Résumé de la Philosophie de Herbert Spencer*, &c.) No. 3. E. Passamonti—Le idee pedagogiche di Aristotele. A. Faggi—Per la psicologia del dolore. [Reviews theories of pleasure and pain with special reference to modern pessimism, and concludes that, psychologically, pleasure and pain are equally real, equally positive, and equally irreducible to one another. Pain is the first excitant to physical and psychical development, but it does not continue to be the preliminary to all activity. When a function has once been acquired, it may be exercised voluntarily for the sake of a prospective good without the stimulus of pain. Only to this extent and with this limitation is the contention of the pessimists true that pain is

the indispensable condition of pleasure. For the rest, the position, even taken in its wider sense, has been held as a psychological doctrine without the accompaniment of philosophical pessimism.] A. Gnesotto—La dottrina del P. Giovenale nelle sue relazioni con quella del P. N. Malebranche. Bibliografia, &c.

Vierteljahrsschrift für wissenschaftliche Philosophie.—Bd. xv., Heft 2. B. Kerry—Ueber Anschauung und ihre psychische Verarbeitung (Schluss). E. G. Husserl—Der Folgerungscalcul und die Inhaltslogik. M. Dessoir—Experimentelle Pathopsychologie (Schluss). [Discusses 'personality' and 'self-consciousness' in the light of hypnotic experiments. The two conceptions are not to be identified. 'Self-consciousness' consists chiefly in a heightening of the intensity of consciousness, while 'personality' is a special complex of mental phenomena. The personality varies from one period of life to another; and that the strands of which it is composed are heterogeneous is shown by the cases—both spontaneous and artificially-induced—in which they become dissociated.] H. Schmidkunz - Der Hypnotismus in der neuesten "Psychologie". Anzeige. Selbstanzeige, &c.

Philosophische Studien.—Bd. vi., Heft 4. E. Kraepelin—Zur Kenntniss der psychophysischen Methoden. [A reconsideration, in the light of later experience, of the methods of psychophysical inquiry, devised as these have been upon no fixed principles, but mainly in order to meet the practical exigencies of the specific questions taken in hand.] O. Külpe—Ueber die Gleichzeitigkeit u. Ungleichzeitigkeit von Bewegungen (i.). E. W. Scripture—Vorstellung u. Gefühl. [An experimental demonstration of the fact that in every mental state factors of intellection and of feeling are combined in varying proportions: made out in the course of a larger research noted below.] A. Kirschmann—Ueber die Herstellung monochromatischen Lichtes. J. Schubert—Adam Smith's Moralphilosophie. [A careful and appreciative study of the *Theory of the Moral Sentiments*, occupying some 60 pp.] W. Wundt—Ueber Vergleichung von Tondistanzen. [A heated defence (36 pp.) of a research of one of the author's pupils (C. Lorenz) adversely criticised by Prof. Stumpf in *Zeitsch. f. Psychologie, &c.*, i. 6.] Bd. vii., Heft 1. W. Wundt—Was soll uns Kant nicht sein? [A restatement (pp. 49) of the untiring writer's judgment on the present value of Kant's philosophy, partly in relation to a paper of some years ago by Prof. Paulsen, "Was uns Kant sein kann?" but chiefly in relation to criticisms made upon his recent *System der Philosophie*.] E. W. Scripture—Ueber den associativen Verlauf der Vorstellungen. [A very elaborate (pp. 50-146) and remarkable attempt to get together a sufficiently large mass of exact experimental facts bearing on the *qualitative* flow of ideas, for effective interpretation in terms of law. It is impossible to do more here than draw attention to this research, which is full of the promise of farther development.] O. Külpe—Ueber die Gleichzeitigkeit, &c. (ii.).

Archiv für Geschichte der Philosophie.—Bd. iv., Heft 3. A. Chiappelli—Nuove ricerche sul naturalismo di Socrate. [Argues that, before arriving at the characteristic positions known to us from Plato and Xenophon, Socrates had passed through a "naturalistic" stage of thought. The representation of him by Aristophanes as a physical speculator is best explicable on this supposition, and traces of his occupation with physical problems are discernible in the *Memorabilia* and the Platonic dialogues. Tradition is in favour of his having been a disciple of Archelaus, and having come into personal relations with

other contemporary "physicists". Be this as it may, there is no doubt that he had diligently studied their writings.] G. Süpfle—Zur Geschichte der cynischen Secte. [Opposes Dümmler's view that the doctrines placed in the mouth of Socrates by Xenophon are really those of Antisthenes, and goes on to investigate the first origins of the Cynical sect.] A. Gercke—Ursprung der aristotelischen Kategorieen. [Seeks to show a Platonic origin for the Aristotelian categories.] P. Tannery—Neuf lettres inédites de Descartes à Mersenne. [Introductory, relating the facts with regard to nine unpublished letters from Descartes to Mersenne, found in the Ashburnham collection. At present two fragments are given of a letter not belonging to the nine.] J. Freudenthal—Beiträge zur Geschichte der englischen Philosophie. [A first contribution to the history of English philosophy before Bacon. The life and writings of Everard Digby are dealt with.] H. Diels—Zwei Funde. [Discusses (1) the newly-discovered treatise of Aristotle on the Athenian constitution, (2) a Latin and Greek inscription giving evidence of the practical interest taken by the Empress Plotina (the mother of Hadrian) in the Epicurean school at Athens.] Jahresbericht (L. Stein, P. Wendland, A. Müller). Neueste Erscheinungen.

Philosophisches Jahrbuch.—Bd. iv., Heft 2. N. Kaufmann—Das Causalitätsprincip und seine Bedeutung für die Philosophie (Schluss). [According to the Peripatetic solution, the causal principle is an analytical, *a priori* judgment of real, objective import. To this doctrine it is necessary to return if science and philosophy are to be rescued from scepticism.] C. Gutberlet—Der Kampf um die Willensfreiheit (Schluss). [Höffding's arguments against indeterminism are discussed, and Lombroso's position touched upon. In some concluding remarks the limited range of human free-will is conceded, but the certainty of its existence contended for on the ground of its being an immediate declaration of consciousness. To deny it involves the rejection of all intellectual evidence.] J. Wolff—Lotze's Metaphysik (i.). [Exposition, preceded by an appreciative introduction.] J. Thill—Das Fundamentalprincip aller Wissenschaften (i.). [Knowledge, to be scientific in the Aristotelian sense, must be deduced from principles. The first principles of knowledge themselves cannot be deduced, but are immediately evident.] Recensionen und Referate. Zeitschriftenschau. Novitätenschau. Miscellen und Nachrichten.

Zeitschrift für Psychologie u. Physiologie der Sinnesorgane.—Bd. ii., Heft 1, 2. H. v. Helmholtz—Versuch einer erweiterten Anwendung des Fechnerschen Gesetzes im Farbensystem. J. Gaule—Was ist unser Nervensystem u. was geht darin vor? E. Raehlmann—Physiologisch-psychologische Studien über die Entwickelung der Gesichtswahrnehmungen bei Kindern u. bei operierten Blindgeborenen. [An important study, mainly of new cases. The author sums up his results in the old formula, 'Nihil est in intellectu quod non prius fuerit in sensu'.] D. Hack-Tuke—Zwangsvorstellungen ohne Wahnideen. K. L. Schaefer—Ein Versuch über die intrakranielle Leitung leisester Töne von Ohr zu Ohr. Besprechung. Litteraturbericht. Heft 3 R. Sommer—Zur Psychologie der Sprache. [Based upon close study of an aphasic patient.] C. S. Cornelius—Zur Theorie des räumlichen Vorstellens mit Rücksicht auf eine Nachbildlokalisation. Litteraturbericht. Heft 4. A. Meinong—Zur Psychologie der Komplexionen u. Relationen. C. Stumpf—Wundt's Antikritik. [Rejoinder (also not without German professorial heat) to Wundt's polemic noted above under *Phil. Studien.*] F. Schumann—Ueber die Unterschiedsempfindlichkeit für kleine Zeitgrössen. Litteraturbericht.

VIII.—NOTES.

PROF. L. STEIN ON LEIBNIZ AND SPINOZA.

In a volume recently published under the above title[1] the editor of the *Archiv für Geschichte der Philosophie* has brought his great erudition, as well as philosophic insight, to bear upon a long and much-debated question, and has succeeded in giving to it at last something like a definitive solution. What did Leibniz, who stood forth in the end as the only possible victor of Spinoza, himself owe to the decried Jewish thinker? The question has the more interest because, while Leibniz through all his later years helped not a little to swell the general chorus of reprobation, his own monadology has yet seemed to many to work out into a pantheism as decided as Spinoza's. Be this as it may, Prof. Stein has seen the need, and also the opportunity, of taking up the question anew, in a fashion not possible before. Gerhardt's collected edition of Leibniz's philosophical works, which has been in progress since 1875,[2] affords for the first time the means of tracking, with an approach to continuity, the all-inquiring man throughout the devious course of his mental development. Where Gerhardt comes short in completeness, or sometimes correctness of chronological presentation, his untiring labours have yet rendered it comparatively easy for others, like Prof. Stein in the present volume, to supply the deficiency by independent search in the Leibniz archives at Hanover. The new task, then, was to take all the discoverable facts of personal relation between Leibniz and Spinoza, and interpret them in the light of what can now be more exactly made out as to Leibniz's intellectual history earlier and later. It was first essayed by Prof. Stein in a Berlin Academy memoir of 1888, and is now achieved with a circumspection and thoroughness that leave hardly anything to be desired. The result is, that we have not only a settlement, which may be taken as practically final, of the Spinoza-question, but also a more coherent and satisfactory view of the development of Leibniz's monadological thought than had yet been furnished of that difficult problem—for all the labour and ingenuity that have been so long bestowed upon it.

It has now for some time back been generally recognised that Leibniz (b. 1646), though already committed to the philosophic life in his teens, had reached his 50th year before he was known publicly to have worked out a new metaphysical doctrine of his own. The publication was by

[1] *Leibniz u. Spinoza.* Ein Beitrag zur Entwicklungsgeschichte der Leibnizischen Philosophie. Von Prof. Dr. Ludwig Stein. Mit neunzehn Ineditis aus dem Nachlass von Leibniz. Berlin: G. Reimer, 1890. Pp. xvii., 362. (See Mind No. 62, p. 298.)

[2] Completed last year with a supplementary (seventh) volume. This includes, with a large variety of new matter, pieces which were noted in Mind, xiii. 312 as absent from the six volumes to which the edition was originally to be confined. Unfortunately, Gerhardt has not supplied the General Index which would have so greatly enhanced the value of his devoted labours. And, apart from Index, a little more practical sense in the matter of headings to pages, &c., would have made reference to the handsome volumes far easier than, to one's sad experience, it now is.

way of two short memoirs in 1695--the *Specimen Dynamicum*, of more specially scientific import, and the better-known philosophical essay, *Système nouveau de la Nature*. Even then he had not lit upon his distinctive watchword of 'Pre-established Harmony' (in that precise form), to express the universal intercommunion of substances; the phrase occurring to him only some months later in the course of sequent controversy. Nor did he adopt his no less distinctive 'Monad,' to express the individuality of each and every substance, till the following year; borrowing it most probably, as Prof. Stein now gives new ground for supposing, from the younger v. Helmont. But the more important and interesting question is, when he had first attained the essential points of his new doctrine of substance. Now as to this it can, with Prof. Stein, hardly be doubted any more that it was by the year 1686, when he wrote the untitled essay (Gerhardt, iii. 427-63, first published by Grotefend in 1846), which he himself speaks of as "un petit discours de métaphysique" in sending at that time an abstract of it to Arnauld (Gerhardt, ii. 11-3). Much lay here undeveloped, which only gradually dawned on him in the course of the correspondence with Arnauld that followed (till 1690) But the central conception of a system of individualised substances is already there; whereas of this there is no trace in the next-earlier writing, published in 1684, the well-known *Meditationes de Cognitione, Veritate et Ideis*. It is surprising that this epistemological tract, in which Leibniz, pursuing his long polemic with Descartes, sought to give much-needed precision to the Cartesian criterion of truth, should ever have been regarded as giving the first indication of his own new doctrine of substance. But, in this default, how are we then to construe the actual course of his mental history up to 1686, the date from which onwards the progressive development of his monadological theory, in all its articulation, can now be accurately traced? Here it is—for the years before 1686—that Prof. Stein succeeds in bringing clearly into view a series of determining factors hardly suspected, or at least not at all definitely enough conceived, before; and these factors all have relation to a demonstrable influence, deep as well as prolonged, from Spinoza.

The main positions are these:—that, after a youth of general philosophical interest and varied aspirations, followed by a time (from 1672) of fruitful mathematical study and discovery, Leibniz was brought, by serious occupation with Descartes towards 1675, to such a state of mind that he was fain to turn for help to Spinoza; that from 1676 his attitude to Spinoza can be described as nothing short of friendly, even after he had made close study of the *Ethica* from the beginning of 1678, revolting in this only from Spinoza's denial of final cause in things; that, in the revulsion, his native concern for teleology was intensified by study of Plato, and before long the definite religious purpose of all his later thought became fixed; that, in particular, he was helped by Plato, towards 1680, to a conception of substance as active force, whereby he could look to reconcile the new mechanical philosophy of the 17th century with final cause in nature; that later on, from about 1684, he came with Aristotle (in more or less Scholastic guise) to see the individual character of his substantialised forces; that thus from 1686, when he wrote his unpublished "*Discours de Métaphysique*" (in order, apparently, to define his philosophical position against the persistent attempts made to win him over to the Catholic faith), he had at last taken his ground, not again to be changed though with much in it still to be developed; finally, that it was only from this time forward that he began to adopt the hostile tone towards Spinoza that, with some rare and significant exceptions, marks the references of all his later years.

It is impossible here to follow out, even in the most general manner, the evidence (some of it quite new) and the acutely reasoned combinations by which Prof. Stein supports these positions; but some more particular account may be taken of the different stages now demonstrable in the relations with Spinoza. Curious it is, to begin with, that in the earliest years Leibniz couples with the name of Hobbes and other modern philosophers the name of the "Cartesian" Spinoza as readily as that of Descartes himself, though Spinoza was then known only by his more or less free exposition of Descartes' *Principia*. We know that Descartes was not seriously taken in hand by Leibniz till some time (probably rather late) in the course of the years, 1672-6, that he spent in Paris; and the delay is remarkable and unexplained, when some years before he had come into as close contact with Descartes' doctrine as he must have been brought by the exposition of Spinoza (1663) or of other Cartesians whom he mentions. But that in Spinoza, at all events, the interest of the eager learner was keen from the first is sufficiently proved by the citations which Prof. Stein makes. It may be doubted, only, whether he does not go too far, at p. 38, when he ascribes to Spinoza's rather than to Hobbes's influence the declaration of Leibniz in 1671, that he regarded geometry as preparing the way for the philosophy of motion or body and this for the science of mind. A more pointed reference to the succession of stages in Hobbes's philosophic thought there could hardly be. And, generally, it may be said that, the more closely one scans all those earlier utterances of Leibniz, including the two academic memoirs on Motion of 1671, the more evidently it appears that, until he became engaged in serious mathematical work from 1672, it was by Hobbes, of all modern thinkers, that he was first and most powerfully affected. Hobbes, as Dr. F. Tönnies has shown (see MIND, xiii. 314), gave him probably the first dim suggestion of the monadic notion, that was to lie undeveloped for so many years; and perhaps also first made him dream that he could not have worthier life-task than to reconcile the new mechanical doctrines with those interests of religion which had been safeguarded by earlier philosophy. It ought, however, to be added that, if not just at the point here remarked on, Prof. Stein is in general most forward to recognise the influence of Hobbes upon Leibniz.

The second stage is of direct personal relation. Even in the earlier years, it is now known, there had been more correspondence between Leibniz and Spinoza than is represented by the single interchange of letters (on a point of optics) given in the *Opp. Posthuma;* but nothing more passed till after 1675, when Leibniz, having now added a first-hand study of Descartes' philosophy to his mathematical achievements, had his interest in Spinoza renewed and heightened by association (at Paris) with Tschirnhausen, who belonged to the inner Spinozistic circle. It is at this stage and what follows on it that Prof. Stein throws most new light. However little one can imagine Leibniz losing hold of his original philosophic ideas and purposes, all vague as they were, it is now certain that, in 1675-6, he was still so far from seeing his own later way that he was, above all, anxious to seek from Spinoza the help which he had failed to obtain from Descartes. This appears first from Tschirnhausen's recommendation, expressed through Schuller to Spinoza (November, 1675), that Leibniz should be taken into confidence; and, when Spinoza would not straightway admit him to sight of the unprinted *Ethica*, we have now evidence that in 1676 Leibniz never rested till he stood face to face with the Hague recluse. That the two met has always been known from an incidental remark of Leibniz in the *Théodicée* (iii. 376); and that their

conversation was not, as there suggested, confined to "anecdotes on the affairs of the time," but extended at least to the Cartesian laws of motion, has also been known, since 1854, from a note, in Leibniz's hand, published by Foucher de Careil. But it is only now, through Prof. Stein's careful research, that we know how serious was their intercourse and how eagerly it was sought by the younger thinker. When Leibniz, in the autumn of 1676, finally left Paris, to take up the official post at Hanover to which he had been appointed some months before, he made his second visit to England and thence took Holland on his way to Germany. But, whereas he was content with a single week on this side of the channel, in Holland he first spent four weeks at Amsterdam in the company of G. H. Schuller, a medical friend of Spinoza, and, having all the time been closely engaged in commenting every scrap of Spinoza's writing which he could get out of Schuller, was then at last (in November) admitted to the presence of the master at the Hague. And here there is proof, set out at length by Prof. Stein with the supporting documents, that their conversations were frequent and intimate; ranging over a large variety of philosophical topics, and so convincing the shy Spinoza of his visitor's earnestness of purpose as well as ability that he produced for him the carefully-guarded MS. of the *Ethica*, and (apparently) allowed a copy to be taken away of the initial definitions, axioms and propositions.

What then was the outcome of their meeting? Before three months had passed Spinoza was no more; and some months later the *Opp. Posthuma* appeared—from the hand (as Prof. Stein first proved the other year) of Schuller, with whom Leibniz at Hanover remained in busy correspondence. Prof. Stein now puts in print all the more important of Schuller's letters to Leibniz (preserved at Hanover). From these, even without Leibniz's letters (except copies of three) which called them forth, it is evident how eagerly interested he was in everything that could throw light on the as yet unpublished doctrine of the *Ethica*. He is seen, too, when the posthumous volume came at last to hand in January, 1678, throwing himself into the study of it with the utmost ardour. Various sets of critical notes which he at once or upon more careful reading wrote down are extant, and have seen the light at different times within the last half century. They betray, in general, as little want of sympathy with some of Spinoza's most characteristic positions as with his method of philosophical demonstration. Only when Spinoza comes to deny intellect and will to God as *natura naturans* and to deride the search for final causes does Leibniz feel bound to mark emphatic dissent. There we see him, evidently, touched to the quick in his innermost and earliest convictions. With his singular openness of mind, especially in those unsettled years, he could give to Tschirnhausen and to Spinoza himself the impression that he was free from religious pre-occupation; and, as now appears from a remarkable letter and epigram discovered by Prof. Stein, he could even sympathise with the tone of Spinoza's stern reproof to the confessional presumption of the whilom pupil, Albert de Burgh. But that he had not lost the aspirations (vague enough) of his youth, towards a philosophical irenicon in the interest of religion, is manifest in his prompt rejection of just those conclusions of Spinoza that were at variance with any religion that the world understood. Though Prof. Stein takes Leibniz's original differences with Descartes to have been purely theoretic, there seems good ground for thinking that, from the time when he first really mastered the Cartesian doctrine, a distrust of its practical consequences helped to stimulate his hostility to its principles. It may well then have been an anxious curiosity to see how far Spinoza

by more rigid method or otherwise, had been able to escape the dreaded consequences that drew him to the Hague. And there finding that the dying man, full like himself of high practical purpose, agreed with him in rejecting Descartes' theory of body and motion, he may for a time have had some real hope that philosophic salvation lay in the way of the mysteriously guarded *Ethica*. The awakening came soon and decisively enough. But that he did not at once—or indeed for some considerable time afterwards—pass out of the mood of sympathetic appreciation is what Prof. Stein has made abundantly clear by all the evidence, new or old, which he here marshals with admirable force. Nor is it countervailed by the fact that in those same years Leibniz could already assume with orthodox correspondents something of his later tone in reference to the hardy Jew. His own formal allowance in 1704 at the beginning of the *Nouveaux Essais*—where Théophile says:—"Vous savez que j'étois allé un peu trop loin autre fois, et que je commençois à pencher du côté des Spinosistes qui ne laissent qu'une puissance infinie à Dieu"—of itself justifies the inference, which is all that Prof. Stein seeks to draw from the facts as now known, that the years 1676-9, in Leibniz's mental history, may well be called "a period friendly to Spinoza".

The influence from Spinoza, of course, did not end with the extinction of Leibniz's hopes. It was, in a sense, never more effective than when the fully-disclosed doctrine of the *Ethica* threw him back upon the thought of antiquity. If Spinoza, at last, stood declared as the ruthless logician who was not afraid to draw out the extremest consequences of Descartes' mechanical principles, was the correction not to be sought outside of the modern movement altogether? Leibniz's boyish acquaintance with the Greek fountainheads of the traditional philosophy had, as regards Plato, been turned to some extent into direct knowledge by 1676, when he translated the two representative dialogues, *Phædo* and *Theaetetus*. In manifest reaction then from the thoroughgoing naturalism of Spinoza, he is seen from 1679 almost at a loss to find words that shall express to his correspondents his veneration for the "holy" Plato, especially when maintaining (in the *Phædo*) the supremacy of final causation for any true understanding of nature. Again, to the year 1680 (as Gerhardt, in a special memoir, has shown) is to be referred the short tract entitled by Erdmann *De Vera Methodo Philosophiæ et Theologiæ*, with its identification of the notions of substance and activity; and that Plato's doctrine of ideas gave the suggestion here to the first definite step in the line of development of the monadic conception is rendered very probable by Prof. Stein's careful argument. Still more effectively does he show that the second great step did not begin to be taken till some four years later, and was then taken under the influence of Aristotle, who from that time overshadows Plato in the mind of the eager thinker now pressing onward to a goal of his own that he has begun distinctly to descry. But while his Plato had sometimes been little more than the Plato of Augustin, his Aristotle appears to have been mainly the Aristotle of the Schoolmen and foremost among these of Aquinas. The point, in both cases, is of interest, because it shows him, first of all, concerned to get his thinking into a relation of harmony with the chief religious authorities of Christendom; but, once he had satisfied himself of this—himself, rather than Arnauld, to whom first he sought to communicate his ideas in 1686—he had no hesitation in proceeding to develop these farther with all the freedom of conscious power and proved scientific ability. The truth is that, though Leibniz had a singularly open intellect and was always (not only now, but even in later age) looking about for suggestions of thought from without, it was nothing more than suggestions

that such a mind as his could put up with. The working-out, the combining and reconciling,—these were all his own. It can, however, be shown, as here by Prof. Stein, that not only his central conception of individualised substance, but also that his working-principle of continuity, was developed under Scholastic influence. For years still to come—till he adopted (and adapted) the name 'monad'—it was Scholastic terms, like 'entelechies,' 'formes substantielles,' and the like, that served his purpose in opposing the hierarchy of active and self-realising substances, each in its degree endowed with a true perceptivity, to every form of the modern doctrine of pure mechanicism—and specially Spinoza's.

With these remarks, the reader interested in Leibniz—as what student of the history of philosophy cannot but be?—must be sent to Prof. Stein's pages for the detailed proof of the novel positions that have here been little more than barely indicated. He will not only find them argued out with a rare circumspectness, but also within the volume will meet with many other unexpected suggestions of no small interest. To mention but one instance: new documentary evidence is here brought to light which throws back the original conception of the *Théodicée* some fifteen or more years from the time of its publication in 1710, and thereby helps to explain the little coherence of its parts (all rather poorly written), and the want of relation which even the latest of them shows to Leibniz's characteristic philosophical ideas, though penned long after these had reached their full development.

EDITOR.

THE ARISTOTELIAN SOCIETY FOR THE SYSTEMATIC STUDY OF PHILOSOPHY (22 Albemarle Street, W.).—Meetings since last record:—Monday, March 16, a paper by Mr. R. J. Ryle, on "The Philosophy of Roger Bacon". April 6, a paper by Mr. D. G. Ritchie, on "Darwin and Hegel". April 20, a paper by Mr. B. Hollander, on "Comte's Analysis of the Human Faculties". May 4, a paper by the Rev. H. Rashdall, on "The Principle of Authority in its relation to Ethics". May 25, Symposium, "Heredity as a Factor in Knowledge"—contributors: Messrs. Perry Coste, D. G. Ritchie, and Bernard Bosanquet. The papers were in every case followed by discussion.

Dr. John Daniel Morell, author of *A Historical and Critical View of the Speculative Philosophy of Europe in the Nineteenth Century* (1847), and of a number of later works, died on 1st April, at the age of 75. In the work mentioned, as also in his *Elements of Psychology* (1853), he was the first to bring forward in England the ideas of Herbart. For his latest philosophical productions, see MIND, iv. 138, ix. 609, x. 402.

SPECIAL NOTICE.

With the October No. of MIND *there will be issued a General Index to the whole Sixteen Volumes then to be completed, and the present Editor will retire from the post he has held since the Review was first started. In January next a* Second Series *of* MIND *will be begun under the editorship of Mr. G. F. Stout, with the co-operation of Prof. H. Sidgwick, Dr. J. Venn, Dr. J. Ward, and Prof. W. Wallace.*

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY.

I.—BELIEF.

By G. F. Stout.

§ 1. *Scope of Inquiry.*—Under the head Belief I include every mode and degree of assent or dissent—everything in the nature of an acknowledgment explicit or implicit of objective existence. Belief is thus for me, as for Prof. James,[1] the "mental function of cognising reality". Like James Mill,[2] I apply the term to "every species of conviction or assurance; the assurance of what is before our eyes as well as of that which we only remember or expect; of what we know by direct perception, as well as of what we accept on the evidence of testimony or of reasoning". It is, perhaps, needless to say that, from this point of view, disbelief must be regarded as a case of belief. To disbelieve a proposition is to believe its contradictory. But denial, no less than affirmation, is an acknowledgment of objective existence. The denial that William Tell ever lived is the expression of a belief about historical matter of fact. It means that the ideas which we connect with the name of Tell are incompatible with the actual course of events; or, in other words, that the historical reality was of such a nature as to preclude

[1] *Principles of Psychology*, ii. 283.
[2] *Analysis*, i. 343 (Note by J. S. Mill).

the existence of Tell. In addition to this, the denial of Tell's existence as an actual person is an implicit acknowledgment of his existence as a creature of imagination, a psychological matter of fact more important than the historical occurrence, which is denied. Doubt also is, in part, a phase of belief. It is belief in a disjunctive judgment. It consists in acknowledging the reality of one or other of a number of alternatives without deciding between them. Doubt is an indeterminate reference to a determinate reality. Hesitation between alternatives presupposes the implicit acknowledgment that the nature of objective existence postulates one of them to the exclusion of the others. On the other hand, in so far as the doubter vacillates between incompatible alternatives, he fails to apprehend the fully determinate reality. Doubt is, in this respect, the imperfection of belief; and, so far as the imperfection extends, it may be regarded as the contrary opposite of belief.

§ 2. *Objective Existence as the Limit of Subjective Activity.*—An object, as Prof. Croom Robertson has said (MIND, xiii. 421), is primarily an "obstacle". The apprehension of real existence depends on the limitation of our volitional activity by the material upon which it is exercised. Under volitional activity I include all modes of activity dependent on feeling. The term embraces both movements of the body, in so far as they are not automatic, and the inward process of fixing and remitting attention. I propose to discuss separately the various kinds of real existence, pointing out the mode in which they manifest their reality by prescribing limits to the range of subjective selection. The physical limitation to which we are subjected in the exercise of our practical activity has been already treated in my article on the "Genesis of the Cognition of Physical Reality" (MIND, xv. 22). A few further remarks will be made on this topic; but we shall have to consider principally the limitation of attention by the nature of the presentations attended to.

§ 3. *The Real in Sensation.*—The real as immediately apprehended in sensation must not be confounded with the reality of physical things as existing independently of the percipient mind. Sensation as such is real in so far as it limits and controls the movement of attention, by restricting the range of subjective selection. There is a very clear statement of this point in Berkeley (*P. of H. K.* §§ 28, 9):—"I find I can excite ideas in my mind at pleasure, and vary and shift the scenes as oft as I think fit. It is no more than willing, and straightway this or that idea arises in my fancy; and by the same power it is obliterated and makes way for

another. This making and unmaking of ideas doth very properly denominate the mind active. . . . But, whatever power I may have over my own thoughts, I find the ideas actually perceived by Sense have not a like dependence on my will. When in broad daylight I open my eyes it is not in my power to choose whether I shall see or no, or to determine what particular objects shall present themselves to my view." This statement in the main fairly and clearly expresses the antithesis between subjective freedom and objective coercion which is involved in the existence of sensation. It is, however, seriously incomplete in two respects. In the first place, it fails to notice the peculiar steadiness belonging to sense-impressions, and communicated by them to the other elements of the perceptual complex to which they belong. So soon as attention to an idea becomes relaxed the idea becomes almost immediately obscured. Thus, as attention is subject to rhythmical intermission at short intervals, the ideas attended-to "flicker," as Dr. Ward says, "like the flame of a gas jet". A percept, on the contrary, may maintain itself in consciousness for a considerable time with approximately the same vividness and distinctness. It possesses a fixity independent of our subjective activity. The second respect in which Berkeley's statement is inadequate is that he unduly narrows the range of the antithesis between subjective selection and objective coercion. He represents it as existing only between attention to ideas and attention to percepts. But a little consideration will show that the same antithesis exists even within the limits of perceptual attention. Even within these limits our activity is to a large extent free. We can choose whether we shall open our eyes or not. When they are open we can choose in which direction we shall look. There is a similar freedom of selection in the case of touch. In the case of hearing and smell it still exists, though it is very much restricted. In contrast with the power of the will over the muscular adaptation of the sense-organs is its powerlessness to determine the nature of the resulting sensation. Only those sensations which are immediately dependent on our own movements form an exception. If we possessed the same kind of command over other classes of impressions, then, in the words of Locke, "the eyes of a man in the dark would produce colours, and his nose smell roses in the winter".

§ 4. *The Real in Judgments of Comparison.*—In general, the process by which we search for relations of likeness and difference between objects seems to be as follows. We concentrate attention in rapid alternation now on A, now on B.

In so doing we endeavour to keep our attention as far as possible fixed on A in the very act of fixing it on B. This attempt is partly successful, partly unsuccessful. It is successful in so far as the two presentations are alike, for to that extent the act of attending to the one is identical with the act of attending to the other. It is unsuccessful in so far as the two presentations are unlike, for to that extent they resist superposition. This resistance, having its source in the intrinsic quality of the objects compared, constitutes a definite limitation of our subjective activity. In and through the peculiar movement of attention which I have described, the points of agreement and difference between A and B gradually emerge into clear consciousness. These agreements and differences are presented as objective facts, because they are presented as having their foundation in the nature of the ideas compared, independently of the act of comparison. I can choose to compare or not to compare a particular purple tint with other purple tints as well as with pure red and violet. I can also determine what degree of care I shall take in making the comparison. But when subjective selection has done its part, I have no choice left. I am compelled to admit that this purple is intermediate between red and violet, being in part like the one and in part like the other, and that it approaches more nearly to pure violet or to pure red than certain other purples with which it is compared.

§ 5. "*Objective Attributes of Presentations.*"—"Everybody," says Dr. Pikler, "believes *all* of his presentations to be possessed of duration and intensity; *all* of his presentations to stand in certain relations, with regard to time, resemblance, or difference, to all his other presentations." It is obvious that facts of this kind have a reality which does not depend on their being cognised by the individual to whose experience they refer, either at the time of their occurrence or on subsequent reflexion. "This is a species of belief in objective existence, the psychology of which has never been laid down."[1] Dr. Pikler deserves credit for his clear formulation of the problem. But I am compelled to reject his solution, which is as follows:—"If I believe that a presentation of mine has lasted a short or a long time, has followed or preceded another of my presentations, and so forth, without these facts being actually presented to me, then the meaning of my belief is that, if it had been my will, I could have had, or, to speak more correctly, I should have

[1] *Psychology of Objective Existence*, pp. 11 ff.

had, together with this presentation or those presentations, certain other presentations . . . ; that is, if it had been my will to have presented to me, or, as it is commonly expressed, to observe the durations, intensities, time-relations, resemblances and differences of my respective presentations". This view appears to be quite untenable when it is confronted with the facts. I believe that my presentations will have or have had relation of sequence and simultaneity, of resemblance and difference, even in cases in which the voluntary observation of such relations is an impossibility. I believe that my experience had a time-order before I was capable of apprehending temporal relations. I believe that a certain presentation in my consciousness resembles in quality a presentation in the consciousness of another person, although no volition of mine could enable me to compare them. My attention is sometimes so engrossed by its objects that I cannot take cognisance of the lapse of time in my own subjective experience: yet I believe on reflexion that my thought has proceeded by a series of successive steps, and that it lasted during a certain determinate period. Dr. Pikler will no doubt have much to say on this aspect of the question, in pt. ii. of his Essay, which is to treat of "*Objectiva* incapable of presentation". Meanwhile I cannot but regard the very existence of such "*Objectiva*" as constituting a serious difficulty in the way of a theory which would resolve real existence into the possibility of voluntary observation. The only plausible mode of meeting this objection which occurs to me is as follows. The sole purport of our belief in unobserved relations and attributes of our presentations is that we should have observed them if we had willed to do so. It does not include the belief that the volition itself was possible. Thus our belief in psychological facts, incapable of immediate presentation within the experience to which they refer, would on this view merely mean, that this incapability is not due to the intrinsic nature of the facts, but to the incapacity of the subject for the requisite act of voluntary attention. If we had willed, we should have taken cognisance of a certain relation of sequence or resemblance. This may be true even though we could not possibly have so willed, just as it may be true that "trespassers will be prosecuted" even though there never will be any trespassers to prosecute.

This defence seems to meet the immediate objection in the form in which I have stated it. But from another point of view it is compromising: for it brings into clear light the fundamental weakness of the whole theory. This weakness

lies in the identification of concrete and particular matter of fact with the mere logical relation of condition and conditioned in a hypothetical judgment. The reality of psychical occurrences is, according to Dr. Pikler, not merely manifested or indicated, but actually constituted, by their relation to voluntary attention. When we assert a psychological matter of fact, we mean that the subject to whose experience it refers would have been aware of it if he had willed to attend to it. We mean simply this and nothing more. We do not even imply the possibility of attending to it or of willing to attend to it. The reality and even the possibility of the antecedent, and therefore of the consequent, in the hypothetical judgment is a matter of indifference. There is, therefore, nothing left but the bare relation of condition and conditioned. This, according to Dr. Pikler, is all that the ordinary man means when he asserts a definite and particular occurrence in his own history.

It is true that a hypothetical judgment, having an impossible antecedent member, may, nevertheless, refer to concrete reality. But it can only do so by implication. It may, for instance, be an illustrative hypothesis throwing light upon the nature of some real thing. But this reality is always presupposed. It is not asserted in the judgment itself. Take, for example, the statement that, if Aristotle lived in our days, he would make an excellent editor of a series of popular science-primers. This proposition, perhaps, illustrates the bent of Aristotle's mind and the nature of modern education. But it presupposes the existence of both. So it, no doubt, illustrates the nature of the "objective attributes of our presentations" to say that they might always be observed if the requisite act of voluntary attention could be performed. But such a statement does not assert the existence of these "attributes". It merely assumes it.

Another flaw in Dr. Pikler's theory is its failure to distinguish between the phenomena which are merely observed by voluntary attention and those which are actually produced by it. The act of introspection modifies more or less the mental processes which it examines. The superinduced modifications are presented as part of the total content of consciousness, so that the psychologist has to use great care and pains in order to detach the independently existing facts which he wishes to observe from those which result from the act of observation. According to Dr. Pikler's view, this distinction is a distinction without a difference. To me this appears to be a *reductio ad absurdum*. The true account of the matter would seem to be diametrically opposed to that

which we have criticised. The reality of a psychological fact, like all other reality, is not constituted by any kind of dependence on volition—not even by that subtle and indirect dependence which is described as "presentability at will". On the contrary, real existence, here as elsewhere, essentially consists in the manifest independence and self-existence of the object in its relation to the volitional activity through which it is cognised. It is presented as a limit imposed on subjective selection. I am, to a large extent, free to choose whether I shall or shall not observe the time-order of my presentations as they pass through the focus of consciousness. But I cannot by the same act determine what the sequence shall be. I cannot by the same act determine which presentations shall be prior or subsequent or simultaneous. To know is not to create. It is true that the act of introspection does, to some extent, alter the character of the mental process to which it is directed. But this alteration, in so far as we are aware of it, is discounted. It is not treated as forming part of the fact which we wish to observe. To reflect on our own motives is to give them a definite formulation, which increases or diminishes their power. But if we wish by our analysis to ascertain the pre-existing strength and mode of operation of these motives, we must eliminate the peculiar reinforcement or enfeeblement which they acquire by their emergence into distinct consciousness. What is apprehended as merely dependent on the cognitive act is not treated as forming any part of the real existence of the object cognised. The object as such is independent of our will. Its objectivity consists in the limitation and control which it imposes on our subjective activity. When we attend to it, we find in it an intrinsic nature manifestly independent of and antithetically opposed to our power of subjective selection. When I scrutinise a presentation, *quâ* presentation, with the view of ascertaining its attributes, I cannot but ascribe to it duration and a position in a time-series. These attributes obtrude themselves upon me with such constraining force that I am unable to think distinctly of a presentation with no duration and no position in time. Hence I believe that all presentations are of this nature, independently of any action on my part or on the part of anyone else.

§ 6. *The Objectivity of Space and of Spatial Relations.*—I do not here intend to touch the question of the genesis of the space-perception or conception. Assuming space as it exists for the developed consciousness, I shall confine myself to an investigation of the psychological conditions on which depends its presentation as an objective reality. Here also

it will be convenient and instructive to begin by examining Dr. Pikler's account of the matter. His view is most clearly formulated in the following passage:—

"We believe that, besides or in the place of the extension or portion of space which is presented to us at any moment in any of our presentations, we may through will (namely, by the motion of our eyes, our heads, our extremities, or by the propulsion of our whole bodies) obtain the presentation of another portion of space to the right, to the left, in front, in the rear, upwards or downwards, of the already presented portion of space, and then again of *other* portions of space in all the above directions from the former, and of other portions of space again, further and further without any limits. Hence, while there is present to us at any moment a portion of space, we believe that had it been our will at a certain preceding period any of these numberless other portions of space standing in certain space-relations to the presented one might be presented to us at the present moment; and we express this belief in this way, that numberless other portions of space exist, or that an indefinite Space exists at this moment, of which the portion of space happening to be presented forms part."

It is obvious that this theory of the objectivity of space, like the corresponding theory of the objectivity of psychical relations and occurrences, identifies actual matter of fact with a mere logical relation expressed in a hypothetical judgment of which the antecedent, and therefore the consequent, may be unreal. For we certainly have not an unlimited power to change our position in space at will. Apart, however, from this rather subtle objection, there is ample reason for rejecting Dr. Pikler's theory.

It is true that we are, within wide limits, free to produce change of place by moving our bodies according to our will. We may choose to move to the right or to the left, forwards or backwards, upwards or downwards, whenever we please. But this freedom of subjective selection has rigid limits imposed on it by the very nature of space. We may turn either to the right or to the left, but we cannot by the same act do both. We may pass from one part of space to another, but we cannot do so without passing through a fixed series of intermediate spaces. We cannot by any effort of ours make the diagonal of a square equal to one of the sides. Now the important point is, that it is just this control imposed by the nature of the object on our freedom which constitutes its objectivity. Our power of determining whether or not we shall move and of selecting this or that direction is purely our own private affair in so far as it depends on our volition. From another point of view we must regard even the range of our freedom as determined by the object which thus prescribes its limits. In so far as this is the case, our power to move implies the real existence of space. But, in so far as this is the case, our power to move

does not depend upon our volition. This will appear most clearly from a consideration of the conditions which cause us to believe in the boundlessness of space. These conditions are by no means sufficiently expressed by the mere statement that we can always command a presentation of change of place by voluntary movement. The essential point is that this constant possibility of transition from one position to another is apprehended as inherent in the very nature of space independently of our will. I am constrained to represent space as boundless, because I am unable by any effort of will to conceive the opposite. A spatial limit is nothing but the junction between one portion of space and another. Whenever, therefore, I distinctly attend to the nature of a spatial limit, I must of necessity admit that space is boundless. I am *ipso facto* constrained to admit that the nature of space as such offers no hindrance to an endlessly progressive movement, whatever obstructions may arise from other causes. But in all this I am purely at the mercy of the object, which obtrudes itself on me independently of my wish or will. It posits itself as boundless, uniform and homogeneous.[1]

What has been said about the objectivity of space in general applies *mutatis mutandis* to the objectivity of space-relations as treated by the geometrician. Having given a scheme or rule of construction, I can carry it out in manifold ways. I may in imagination shorten or lengthen the sides of a plane rectilinear triangle as much as I please so long as I do not make any two of them together equal to the third. So soon as I do this the triangle ceases to exist and becomes a straight line. This is a limitation imposed on constructive attention by the very nature of the material on which it is exercised. Of course there are many difficulties connected with the apprehension of geometrical truths which are not touched by this account. So far as these difficulties belong to epistemology, I am not here concerned with them. I feel bound, however, to say something about the imperfection of our geometrical constructions, both mental and physical. Geometrical truths are, in the first instance, presented as limits imposed on the constructive movement of attention by which it traces geometrical figures in imagination. But we cannot in this mental experimentation construct perfect figures. I think that most of us succeed better mentally than we do on paper. But there always seems to be some imperfection in the result of our

[1] Of course I do not wish to prejudge the question as to whether space is boundless, uniform and homogeneous. I only mean that it presents itself as such to the uninstructed in transcendental geometry.

best efforts. How is it then that, being aware of this defect, we, or at least most of us, possess such an unwavering certitude of the truth of geometrical axioms? The answer to this question seems to me to be contained in the Kantian doctrine of schematism. A *schema* is, according to Kant, a certain rule of construction which we *endeavour* to observe. Psychologically, I should say that it was an apperceptive system of what I have elsewhere called the proportional or analogical kind. Such a system is a combination of ideal elements having as their principle of union a certain similarity of the relations in which they severally stand. Thus the common relation of equidistance which all the points on the circumference of a circle bear to the centre is a formal affinity sufficient to constitute the systematic unity of an apperceptive system. For the formation of a system of this kind, it is not necessary that we should ever have had experience of a perfect circle, either through our freely constructive movements, or through those movements by which we follow the outline of sensible things. If the blending of the residua of a plurality of particular experiences depends entirely upon a certain relational similarity between their respective contents, the unity of the product will be wholly constituted by this formal affinity. The irregular deviations from the typical relation in particular cases will count for nothing in the ultimate result, because they *ex hypothesi* play no part in producing this result.

Now a mental formation of this kind supplies the psychological basis of geometrical schematism. The constructive activity, which is initiated and guided by such an apperceptive system, aims at the tracing of a perfect circle. In so far as it falls appreciably short of this aim, the shortcoming is recognised, and an endeavour is made to correct it. Defects in the synthesis of apprehension are continually detected and rectified by the synthesis of recognition. Our certitude of the truth of geometrical axioms, notwithstanding the imperfection of our geometrical constructions, is, I think, in part explicable as follows. We construct according to a *schema* or rule. This rule is imperfectly carried out. But the more nearly we approximate to its realisation, the more does our constructive activity become limited in a certain respect. Thus, if I continuously diminish the length of two sides of a plane rectilinear triangle, keeping that of the third unaltered, I find that I must at the same time bring the vertex continuously nearer to the base. In and through this process I become aware that, if I make the length of the two sides together equal to that of the third, I am unable to prevent the vertex from coinciding with a point in the base.

This explanation is, however, incomplete. It does not show how I am able to fix the exact point at which the vertex will coincide with the base. To explain this we must take into account the continuity and uniformity of space and the consequent continuity and uniformity of movement. It is true that I cannot make the two sides of the triangle exactly coincide with the third if I picture them as at rest relatively to each other. But if I continue the movement of the vertex, so as to make it emerge at the other side of the base, I *ipso facto* include the coincidence of the two sides with the third as a transition-stage of the process. At the same time the triangle vanishes.

This is why I am certain that any two sides of a triangle must be greater than the third. I am not here concerned with the validity of my belief. I have merely tried to analyse the psychological conditions of my subjective certitude. These seem to me to lie ultimately in the impassable barriers, arising from the very nature of space, which confine the freedom of my constructive movement. I encounter these obstacles as I encounter the resistance of material things in the attempt to overcome them.

§ 7. *Reality in the Association of Ideas.*—Association is undoubtedly a cause of belief. If certain contents of consciousness have once been copresented in a certain relation to each other, the reproduction of the one tends to bring about the reproduction of the other in the same relation in which they were originally copresented. It is sometimes impossible to counteract this tendency without a mental effort, and the required mental effort needs, *ceteris paribus*, to be more strenuous in proportion as the association is closer. Under these conditions preformed associations offer resistance to our subjective activity. In some cases this resistance is insuperable. James Mill used the term "indissoluble associations" to designate these connexions by which the range of subjective selection in the combination of ideas is rigidly restricted. He maintained that all cases of belief are referable to indissoluble association. For reasons too obvious to mention, I disagree with this doctrine. But I do agree with him, as against his son, that cases of indissoluble association are *ipso facto* cases of full belief.

I now proceed to consider the criticism directed by the younger against the elder philosopher.

John Mill tells us that "what the author of the *Analysis* means by indissoluble associations are those which we cannot by any mental effort at present overcome. If two ideas are, at the present moment, so closely associated in our minds, that neither any effort of our own, nor anything else

which can happen, can enable us to have the one without its instantly raising up the other, the association is, in the author's sense of the term, indissoluble". In the main this is a good formulation of James Mill's view. But in two points it is, I think, capable of improvement. In the first place, the ideas need not be so closely associated that no effort of our own, nor anything else that can happen, can enable us to dissolve their connexion. The words "*nor anything else that can happen*" are unnecessary and misleading. The essential point is the limitation or constraint imposed on our subjective activity, under certain given conditions, by an association between distinguishable contents of consciousness. In the second place, it is ambiguous to speak of "one idea raising up another". To preclude misunderstanding, it would be better in a formal statement to say that, when two ideas are indissolubly associated, no effort on our part can enable us to attend to the one without its instantly raising up the other, in a certain fixed relation to itself, as part of a single complex presentation. But even this wording of the definition is, perhaps, not sufficiently guarded. Thus a may sometimes fail to call up b in the way described, and yet the association between them may for our present purpose be rightly regarded as indissoluble; the essential point is that when a does recall b we shall not be able by any mental effort to substitute for b any other and incompatible presentation x in the same relation to a.

Bearing in mind this preliminary explanation, let us now examine J. S. Mill's criticisms. He begins by admitting that indissoluble or, as he less happily terms it, inseparable association very often suffices to command belief. This admission can hardly be refused by anyone. If I have just heard a certain series of sounds, and I proceed to recall them in memory, my belief in their time-order may be wholly or almost wholly based on association. If I recall the sounds a, b, c with sufficient vividness and completeness, together with their accompanying circumstances, I cannot help believing that d followed c and preceded e. Of course, I am not now trying to explain how and why we believe in the reality of past time. This would require a consideration of the whole question of time-presentation. All that I mean to say is that, given a belief in the reality of past time, mere association may be sufficient to constrain us to represent an event as having a certain fixed place in a time-series. Mill's admission, I suppose, comprehends cases like these. It also comprehends cases of a much more doubtful kind—doubtful not as regards the existence of a belief but as regards its

dependence on association. Thus, as we know, he would actually trace our belief in the infinity of space to this cause.

His main contention as against James Mill is "that the inseparable associations which are so often found to generate beliefs do not generate them in everybody. Analytical and philosophical minds often escape from them, and resist the tendency to believe in an objective conjunction between facts merely because they are unable to separate the ideas." Now I think it will be found that if and so far as the philosophical minds have succeeded in overcoming the "tendency to believe" they have also acquired the power of dissolving the corresponding association by a mental effort, and that if and so far as the association remains inseparable the belief is unaltered. Let us consider some of the cases which are examined in the younger Mill's note. The first of these is "the association between sensations of colour and the tangible magnitudes, figures and distances, of which they are signs and which are so completely merged with them into one single impression that we believe we see distance, extension and figure, though all we really see is the optical effects which accompany them, all the rest being a rapid interpretation of natural signs". On this he remarks that a "great majority of those who have studied the subject believe otherwise," although the retinal picture suggests to them the real magnitude in the same irresistible manner as it does to other people. The fallacy of this argument seems obvious. There is an association between certain visual impressions and certain tactile and auxilio-motor elements forming part of the same perceptual complex. The natural man does not identify these elements as tactile and auxilio-motor, but, *ex hypothesi*, he is aware of them; and certainly if the question ever occurred to him he would believe in their presence as ingredients in his visual percepts. But, *ex hypothesi*, the scientific thinker believes in their presence also. He only differs from the plain man because he has a theory of how they come to be there. Furthermore, there is an association between the visual tactile muscular complex and what John Mill would call the "present possibility" of having certain tactile visual and muscular sensations in a certain order. This association is ordinarily indissoluble, and when it is indissoluble it is invariably accompanied by belief. As I sit writing I see a candle before me; the sight of it suggests irresistibly the present possibility of touching it by a movement of my arm, and I believe that I can so touch it. The cause of my believing that I am able to do so is that I cannot by any effort represent myself as unable, except by representing the

conditions as altered. Turning now to another example quoted by John Mill from the author of the *Analysis*, let us suppose that I look at a distant terrestrial object through a telescope; it appears nearer. That is, its appearance is similar to that which it would present to the naked eye if it were nearer. This appearance is a highly complex presentation traceable to tactile and muscular as well as to visual experiences. It may for a moment call up the idea of a real distance such as would correspond to it under ordinary conditions: it may for a time maintain this idea in consciousness in just the same relations to itself as those in which it would under ordinary conditions be presented. Precisely as long as this lasts, *i.e.*, precisely as long as the association remains indissoluble, the belief persists. In my own case the deception appears to last for at least a fraction of a second. The belief is, as James Mill says, "immediately corrected by accompanying reflexion". But this accompanying reflexion corrects the belief by dissolving the association. I come to connect the whole optical-tactile-muscular complex, which constitutes the appearance of the object to my eye, with a different physical distance.

John Mill's objection resolves itself into this: the plain man does not distinguish between the impressional and the other elements of the perceptual complex which is presented to him when he looks at an object. This is no doubt true. But it is quite irrelevant. The plain man has an inseparable association between the appearance of an object to the eye and a certain experience obtainable under given conditions. He believes that on observing these conditions he will have the experience. But the most analytic philosopher believes the same. As regards the question of psychological analysis, it does not seem obvious that the plain man has formed any association at all. If he has, and if the association is at the outset inseparable by any mental effort, it is certain that it becomes separable by a very slight effort when the plain man has become a psychologist. It would be tedious and perhaps useless to prolong this discussion. Suffice it to say here that I believe it possible to deal in a similar manner with all John Mill's criticisms in cases where association really is indissoluble.

James Mill was right in holding that a connexion of ideas which at any moment we find to be indissoluble by mental effort is at that moment a belief. But he erred in regarding this relative inseparability as dependent merely on the strength and intimacy of the association between the ideas connected. The closest association between a and b fails to enforce the combination ab, if this combination is opposed in any in-

stance by sufficiently powerful counter-associations. Thus we readily correct the error momentarily induced by a ventriloquist, who makes lay figures appear to speak. On the other hand, a comparatively feeble association may command belief merely from the absence of counter-associations. This is the basis of Bain's doctrine of primitive credulity—a doctrine fully borne out by all that we know of the beliefs of children and savages, and of the suggested beliefs of hypnotic patients. "It never occurs to the child to question any statement made to it until some positive force on the side of scepticism has been developed." Similarly, a suggestible patient may be made to believe that he is Julius Cæsar, or a pig, simply because opposing mental connexions are inoperative. But we are here on the threshold of a fresh topic.

§ 8. *Subconscious Conditions of Belief.*—The presentations which successively emerge into the focus of consciousness are only fragmentary portions of the total mental system. They and their connexions are integral parts of a ramifying net-work of associated elements. It follows that the strength of an ideal combination *ab* as presented at any moment need not depend merely on an association between *a* and *b*. In most cases the coherence of the combination *ab* with the total complex of associational and other connexions of which it is part, will be a far more powerful condition. Many, if not most, of our beliefs depend on the operation of subconscious elements which, in massive combination, cooperate to support a certain connexion of ideas which appears in consciousness as an object of attention. Abundant confirmation and illustration of this doctrine is to be found in Newman's *Grammar of Assent*, especially in the chapter on informal inference. The following quotations seem to me to express with admirable accuracy the psychological genesis of many of our most deeply-rooted convictions: "As by the use of the eye-sight we recognise two brothers, yet without being able to express what it is by which we distinguish them . . . so the mind is swayed and determined by a body of proof, which it recognises only as a body, and not in its constituent parts." "It is dominated by the substance and momentum of a mass of probabilities acting upon each other in correction and confirmation." On this I would remark that the words "proof" and "probability" involve unwarranted assumptions. The massive support which a belief receives from its subconscious connexions need not have any pretence to logical validity. It may depend to a great extent on preformed associations which are founded on casual and trivial connexions of ideas. It may arise from the connexion of the belief with practical

interests or æsthetic enjoyments, or with some powerful organic sensation. With the same reserve as regards this use of logical terms, I quote the following excellent statement: "We grasp the full tale of premisses and the conclusion, *per modum unius*, by a sort of instinctive perception of the legitimate conclusion in and through the premisses, not by a formal juxtaposition of propositions". Among the many good examples which he adduces I need refer only to one—our belief that Great Britain is an island. This belief is not due merely to a direct association between the idea of Great Britain and the idea of an island. Besides the fact that we have been so taught in childhood and that it is so in all the maps, we must take into account the absence of contradiction or question, *i.e.*, of counter-associations. But this is very far from an adequate statement of the conditions on which our belief depends. A still more important condition is that comprehensive and complex systems of mental connexions would become disintegrated by persistently and consistently representing Britain as joined to the Continent. "Our whole national history, the routine transactions and current events of the country, our social and commercial system, our political relations with foreigners, imply in one way or an other the insularity of Great Britain."

§ 9. *Apperception and Belief.*—It follows, from what we have said concerning the influence of the general mental organisation on the stability of ideal combinations, that such combinations may be separable or inseparable according as this or that apperceptive system happens to be predominant. This is best seen in its pathological exaggeration in the case of suggestible patients. The operator calls into play a certain group of mental factors: this group has unchallenged predominance; for all other constituents of the total mental system are relatively dormant. Ideal combinations which are coherent with the suggested group are *ipso facto* beliefs, however absurd they may be in themselves. A patient to whom it has been suggested that he is Emperor of China will believe all that occurs to his mind as implied in his imperial position. He cannot by any effort of will represent things otherwise than as they are brought before his consciousness by external suggestion. He must, therefore, accept the suggested situation as real. The apparent reality of dreams is to be explained in a similar way.

Under normal conditions also the necessary alternation of different apperceptive masses produces a corresponding variation in the conditions of belief. Thus, as I have elsewhere remarked, a person's opinions under the influence of an imposing religious ceremony may differ considerably from

those which he entertains in pursuing a scientific or critical research. It is quite conceivable that a professor of anatomy, who is also a devout Roman Catholic, may pay veneration to what are alleged to be bones of saints, although his scientific knowledge would constrain him to identify them as bones of animals. Some of the examples quoted by the author of the *Analysis*, and examined by J. S. Mill, ought to be considered from this point of view. I shall refer to one only. Sailors have seen prints of a foot resembling those of a man, and the idea is raised of man making the print. When they afterwards see a monkey, whose feet leave traces almost similar, the idea is also raised of a monkey making the print; and the state of their minds, according to the elder Mill, is doubt. "First the print raises the idea of a man, but the instant it does so it also raises the idea of a monkey. Each idea displaces the other in turn and hinders it from that fixity which constitutes belief." On this John Mill remarks: "This alternation between the two ideas may very well take place without hindering one of the two from being accompanied by belief. Suppose the sailors to obtain conclusive evidence, testimonial or circumstantial, that the prints were made by a monkey. It may happen, nevertheless, that the remarkable resemblance of the footprints to those of a man does not cease to force itself upon their notice: in other words, they continue to associate the idea of a man with the footsteps." In this criticism there appear to me to be two fallacies. In the first place, it is incumbent on the critic to show not merely that an association between the footprint and a man may persist, but also that the association which persists is the same with that which existed before the opposing testimony regarding the monkey had been obtained. The sight of the footstep suggested the idea of a man as having produced it, not merely as being capable of producing it. If this latter association remains indissoluble, so does the corresponding belief. The sailors still believe that men produce footprints of that kind. But Mill might urge that, even after the conclusive testimony to the agency of the monkey, it is possible for the original ideal connexion to recur at least momentarily with coercive force. This is true. But the important point is that this possibility lasts only so long as the sailor is comparatively oblivious of the conclusive evidence connecting the existence of the footprint with the agency of the monkey. So long as the apperceptive system, which is the psychological counterpart of testimony in general and of this testimony in particular, is inoperative, there is room for the momentary belief that the man made the foot-

print. The sailor would probably say that sometimes when he looked at it he couldn't help believing it was a man's, although, of course, he knew it wasn't.

§ 10. *The Real in the Products of Constructive Imagination.*—The alternating predominance of various apperceptive systems enables us to explain what is commonly called the difference between Belief and Imagination. This seems to be hardly an accurate way of wording the distinction. For the work of imagination either imposes an illusion on the mind or it does not. In the latter case, what is imagined is also disbelieved; in the former case, it is momentarily believed. In both cases, therefore, there is a certain reference to reality. Illusion, with which we are here mainly concerned, is a temporary and often more or less imperfect belief in the product of constructive imagination; a belief depending on certain conditions which are within our voluntary control. We can to a large extent command the prompting cues of apperceptive systems. We may arbitrarily repress the operation of certain systems, both directly by withdrawing attention[1] from them, and indirectly by placing ourselves in circumstances unfavourable to their activity. On the other hand, we may in a similar way call others into play. By these means ideal combinations become possible, which would otherwise be impossible, and these combinations may, so long as the conditions are maintained, be difficult or impossible to dissolve by any mental effort. "It thus comes about that we can say such things as that Ivanhoe did not really marry Rebecca, as Thackeray falsely makes him do. The real Ivanhoe-world is the one which Scott wrote down for us. The objects within that world are knit together by perfectly definite relations, which can be affirmed or denied. While absorbed in the novel, we turn our backs on all other worlds, and for the time the Ivanhoe-world remains our absolute reality. When we wake from the spell, however, we find a still more real world, which reduces Ivanhoe, and all things connected with him, to the fictive status."[2] In general the illusions of imagination involve belief. But this belief is distinguished by the peculiarity that it can be indirectly produced or dissipated at will. In a word, it is a product of what children call "make-believe".

§ 11. *The Real as Physical Resistance.*—The limits opposed by material obstacles to the free movement of our limbs constitute a constraint imposed on our subjective activity. In

[1] I am disposed to believe that the fixing of attention on an apperceptive system is, from the psychophysical point of view, mainly or wholly a localised variation in the blood-supply of the brain

[2] W. James, *Principles of Psychology*, ii. 292, note; cp. MIND, xiv. 329 *n.*

the experience of the irregular interruption of otherwise continuous series of muscular sensation, which, apart from this restriction, are producible at will, we apprehend real existence. The reality, together with that of sensation as such, being communicated to the interpretations which we are constrained to put both upon sensations and their order, gives rise by a very complex process to the presentation of a physical world. I have endeavoured to deal with this subject in my article on the "Genesis of the Cognition of Physical Reality" in MIND, No. 57. It would be futile to repeat even in outline what I have there said. I take this opportunity, however, to consider some points in the rival theory propounded by Dr. Pikler. This theory is a special development of his general thesis—that "the '*would be*' of presentation is the '*is*' of objective existence". He differs from Mill mainly by his introduction of will as an essential condition of that permanent possibility of presentation which, as he holds, constitutes physical reality. A possibility of presentation which is not within our voluntary control is not an objective existence. On the other hand, whatever would be presented if it were our will to move our bodies in a certain way is *ipso facto* real. I shall confine myself to one objection which Dr. Pikler has himself noticed and sought to meet.

Presentability at will is a formula which applies to two radically distinct groups of cases. (1) An object is presentable at will when the voluntary movements required for its presentation are merely movements conditioning the perceptive process. (2) It is presentable at will when it can be produced by a voluntary movement which actually changes the pre-existing condition of the thing perceived. Now, in the second group of cases, it would seem that permanent presentability dependent on volition neither constitutes nor implies the objective existence of the presented content. We may, if it be our will, break a glass and so obtain the presentation of broken glass. But we do not for that reason believe the glass to be actually broken. Dr. Pikler's defence is as follows:—"The various possibilities of effects producible through our will upon the things surrounding us may be expressed by saying that these things possess certain objective properties. Nay, in certain cases we actually express them in that way. In order to feel the resistance or hardness of a thing, it is not enough to come up close to it, but we must press it; in order to feel its weight, we must lift it; and in order to ascertain its taste, we must act upon it by resolving it in our saliva. That things are resistant, hard, heavy, or have a certain taste, means that by pressing or lifting them, or by resolving them in our saliva, we are

able to obtain certain presentations." The motions or the endeavours to move, which are required in some other cases, are only more complicated. "That a certain thing is inflammable (namely, if we scrape it) is just as much an objective property of that thing as its hardness." It is scarcely needful to point out that the reference to resistance, hardness, and weight is irrelevant. The movements of lifting and pressure which reveal the existence of these properties play no appreciable part in their production. The case of taste is somewhat different. But it is not to the purpose; for we ordinarily take no account of the part played by the saliva in the process of tasting. When we do take account of it, we say that a body does not become sapid until it is dissolved. In all cases in which the presentation of a is recognised as dependent on a physical change produced in bodies by our voluntary agency, the fallacy of Dr. Pikler's contention is obvious. The possibility of producing such change does indeed imply an objective attribute; but this attribute never is and never can be a. I can command at will the presentation of a body in flames by scraping its surface. But I do not, therefore, say that it actually is in flames. I only say that it is inflammable.

Presentability at will implies existence only if and so far as the reality of the thing presented is independent of the volition by which it comes to be presented. The movements by which we bring ourselves into the vicinity of a body and by which we accommodate our sense-organs, and the use of artificial aids to perception such as telescopes and microscopes, do not as mere conditions of the cognitive process affect the existence of the thing cognised. We, therefore, regard it as a matter of indifference whether these voluntary actions are executed or not. Whatever *would be presented* if we chose to perform such acts must be believed to exist, whether we so act or not, just because our action would not produce the perceived object, but merely permit it to display its reality as independent of us. This seems to be an adequate account of what Prof. Mark Baldwin (MIND, No. 63, p. 389) calls the "memory-coefficient" in our perception of physical reality. The existence of a physical thing is primarily presented in sense-perception. The remembrance that we have perceived or the anticipation that we shall or may perceive it are logically equivalent to the actual perception. But the remembrance and anticipation have this force only in so far as they include a reference to the object as originally revealed to the percipient, *i.e.*, as having independent existence. Thus the

memory-coefficient is altogether secondary and subordinate to the perceptual coefficient. I still fail utterly to understand how dependence on our activity can *mean the same* as independence of our activity.

§ 12. *Conclusion.*—The consciousness of real existence is generated by the limitations imposed on attention by the nature of the objects attended to and by the corresponding limitations imposed on volitional movements by material obstacles. The mind is not a Leibnizian monad. Its processes are not sustained purely by their own inward momentum. They are continually being modified and controlled by extraneous conditions. Hence arises the consciousness of reality in sensation and in the experience of resistance. The same consciousness is also founded on associative and apperceptive connexions, in so far as these limit the liberty of subjective selection in the combination and separation of ideas.[1] It has another source in qualitative and relational resemblance and difference between presentations. But these conditions can operate only in conjunction with the law of conflict, which is the psychological counterpart of the logical law of contradiction. If we could represent *a* as standing in identically the same relations to *b* and to *c*, there would be no consciousness of reality as such. The psychological conditions operative in the growth of ideal combinations are even in prelogical stages of mental evolution restricted within definite channels by the impossibility of combining contradictory opposites when once they are superposed. The incompossibility of superposed contraries is, as Lange says, "a trenchant blade by which in the progress of experience untenable combinations of ideas are severed while the tenable combinations persist". This is the ultimate ground of the limitation of subjective selection in the combination of ideas, and it is, therefore, the ultimate ground of all consciousness of real existence.

[1] Prof. James would object to such a phrase as "combination and separation of ideas". He says:—"*There is no manifold of coexisting ideas;* the notion of such a thing is a chimera. Whatever things are thought in relation are thought from the outset in a unity, in a single pulse of subjectivity." Few, I think, would at the present day call in question the general purport of this statement. But why does Prof. James give so unusual a sense to the word *idea*? According to general usage, an idea is not a "pulse of subjectivity," but a presentation, a psychological object, a *Vorstellung* as opposed to *Vorstellen*. The discoverer of the "new way of ideas" defined it as "whatever is the object of the mind when a man thinks". His followers, among whom I wish to be counted, have held to this definition with a fair degree of consistency.

II.—THE PHYSICAL BASIS OF PLEASURE AND PAIN. (II.)

By Henry Rutgers Marshall.

In pt. i. (Mind, No. 63) I have attempted to present the evidence which leads me to the conclusion that Pleasure and Pain are determined by certain physiological relations of a general character, *viz.*, the relations between the amount of activity in, and the nutritive conditions of, the organ which determines the conscious content. It remains to examine this thesis in detail.

At the very beginning we are met by the special difficulty of physiological psychology, which looks for a physiological basis without adequate means of applying physiological experiment. The difficulty is serious enough in ordinary cases where the functioning of special organs is examined, but it is peculiarly so in connexion with our special investigation, for, as I have before noted, evidences of the very *existence* of special organs for Pleasure and Pain are entirely wanting: these states, so far as they can be said to have organs at all, seem to depend upon new activities with each change of content. All that we can hope to do, therefore, is to note on general lines the physiological conditions of the relations between activity and nutrition, which in the case of terminal organs we dimly see to be connected with pleasure and pain, and to ask whether these physiological conditions are constant whenever pleasure and pain are present in consciousness.[1]

The thesis reached in pt. i., in its simplest form, is this: *Pleasure and Pain are determined by the relation between the energy given out and the energy received at any moment by the physical organs which determine the content of that moment; Pleasure resulting when the balance is on the side of the energy given out, and*

[1] There are other obstacles in our way which we must be prepared to face, but which it is not necessary to dwell upon. Nature's tendency to automatic regulation works *in the individual* against the continuance of extreme states, and tends to the obliteration of pains. *In the race* the emphasis of the advantageous and the tendency to the suppression of the disadvantageous complicate the evidence. The motion of habitual states towards unconsciousness renders the tracing of laws difficult.

Pain when the balance is on the side of the energy received.[1] *Where the amounts received and given are equal, then we have the state of Indifference.*

Now it is evident, I think, that this statement is not in any strict sense capable of either psychological or physiological verification: we must turn, therefore, to the data which have led to the adoption of the formula. Taking a step backward, we find that our thesis may be stated in these words: *Pleasure is produced by the use of stored force in the organ determining the content; and Pain is determined by the reception of a stimulus to which the organ is incapable of reacting completely. Indifference occurs where the reaction is exactly equal to the demand by the stimulus.* This statement, however, is purely physiological, and, to be of practical value to us, must be translated into psychological terms. In so doing it will be necessary to recur to physiological conceptions.

Each bodily organ has, as we know, a certain amount of elasticity. The lungs contain a body of fixed air which is not changed in normal expiration and inspiration, but which may be partly changed upon systemic demand by increase of rapidity or depth of breathing. The muscles can all do more than their normal work for a short time without perceptible deterioration. Carrying out the general principle under consideration, we may hold it highly probable that the average nerve *which is normally active at regular intervals* will have a certain amount of stored power which may be used if at any time the stimulus received is hypernormal for a short time: but in ordinary the balance between energy given out and received will be approximately equal. If, on the other hand, at any time the stimulus received be less than normal, the blood-supply to the nerve not being correspondingly diminished, there will result a storage of power, varying in quantity with the capacity of the nerve, tending on the whole to be largest in those nerves which are at intervals called upon to react to extreme stimuli. We should expect, therefore, to find the following psychological conditions for Pleasure:—

A content which appears normally at relatively regular intervals will tend to be indifferent. If it appear with hypernormal intensity or frequency suddenly in the course of the normal regularity, it will for a relatively short time appear as pleasurable, but this pleasurableness will soon fall away into indifference. A con-

[1] Care must be used not to make "energy" here the equivalent of "capacity to energise," which would make the statement a false one. As we have seen in pt. i., this is no uncommon error.

tent which has appeared normally at relatively regular intervals but the appearance of which has been suppressed for a time, will, when it appears, be distinctly pleasurable, and the intensity and duration of this pleasurableness will be determined partly by the length of time which has elapsed since the normal appearance in consciousness, and partly by the frequency with which it has in the past been liable to suppression or to appearance under conditions of exceptional intensity.

Turning to Pain. Any stimulus of hypernormal frequency or amount reaching a nerve which has been often active should, if our position be correct, first bring into use such stored force as there is in the nerve until the amount of energy given out becomes equal to the energy received from the stimulus. If the hypernormality of stimulus be continuous, this relation would exist for a brief period only, and then the amount of energy given out would become less than the amount received, the balance in favour of stimulus increasing (if nutritive processes do not materially change) until deterioration of the nerve began to supervene, in which case the activity of the nerve would gradually decrease until it became entirely incapable of functioning.[1] In all cases the system is probably able in consequence of the fuller action to increase the nourishment-supply, and if the over-action be not too extreme the extra-supply of nourishment would be expected to bring about a condition of equality between the supply and the demand.

This, translated into psychological terms, would read thus:—

If a content which has already often appeared in consciousness appear with unusual frequency or exceptional intensity, it will ordinarily be accompanied at first by pleasure, which usually will wane until the content appears indifferent. If the hypernormal stimulus continue (except as below described) the content will become painful, and this pain will increase in amount, and having

[1] That continuation of painful action beyond limits produces more or less permanent destruction of the parts involved seems to be shown by observation. The over-worked muscle at length refuses to do its work. Excess of light blinds us more or less permanently, and continued excess of sound will deafen. Continuous over-feeding, besides its discomforts, will produce destructive action in the digestive organs. Tastes are not often allowed to continue through great painfulness, but to both tastes and smells which are disagreeable we soon become callous, that is, we become unable to obtain conscious effects through the stimulation of these organs. The most painful Emotional states due to excess of activity finally exhaust themselves and disappear in the exhaustion. The over-activity pains of Intellect disappear in mental inactivity, in sleep.

reached a maximum will decrease gradually until it disappears, but in general with it will also gradually disappear the content itself, not to reappear in consciousness for a considerable time, if ever. In some cases, however, if the content be not over-intense, we may look for a gradual decrease of the pain felt at the beginning until a condition of indifference is reached.

If our position be valid, therefore, the psychological conditions which I have placed in italics above should be traceable as laws wherever contents are fixable and are subject to variation in intensity or in rhythm of recurrence.

Before we undertake this task, however, it will be well, for reasons presently to appear, to examine a few corollaries which seem to follow from the physiological view we have taken, and ask whether the psychic states which we should expect to correspond therewith are found in consciousness.

Let us first consider certain aspects of what I in pt. i. have called the principle of "nutritive momentum". If a hypernormal stimulus cause painful action, increasing even far enough to bring about deterioration of the nerve-tissue, the result may in the long run actually conduce to increase of the capacity for action. For this hypernormal stimulus will indirectly increase the blood-supply, and, if the action be not carried too far, when rest comes there will supervene a condition of stored energy, so that upon a later application of the same stimulus the organ may be found not only ready to act, but ready to act under the conditions which involve pleasure. In fact this may happen *in the course* of hypernormal activity, if it be not too excessive. If the supply of nutriment increases rapidly the deterioration of the nerve substance may decrease and may finally cease altogether, and, as a result, the stimulus may no longer be excessive as related to the condition of the organ.

One more point. As our system tends to balance, it is to be expected that in the long run the supply of nutriment to an organ will come to be approximately equal to the call which the organ habitually makes upon the system. Hence it will result that oft-repeated activities in definite organs will render storage of force unusual and finally practically impossible, except under unusual conditions. Thus, organs which at the beginning of a series of stimulations had no capacity for storage and were unable fully to react, and which perhaps have become capable of storage and of giving up of stored force in answer to the stimulus, may be expected to lose the storage-*habit*, as the stimulus becomes more usual and recurrent, although retaining for a time the storage-*capacity*, which itself may be expected practically to disappear so soon as regularity of stimulus recurrence has become fixed.

If we translate again into psychological terms we shall obtain the following:—

Pain does not necessarily tend to bring about obliteration of its content in future psychoses; but may, in fact, on the whole, conduce to its vigorous reappearance in pleasurable form. That is, a content which appears painfully at one time may, if recurrent at a proper interval, be found slightly pleasurable, and if carried out to painfulness at this second appearance may be found still more pleasurable at a third appearance at the same proper interval. In fact, it may even happen that an almost continuously present content, if not too intense, may begin by being slightly painful, but end in becoming non-painful and even pleasurable in a small degree for a time. In other words, decrease of pain may appear before the maximum of pain is reached, and in that case the content will not disappear with the reduced pain, provided the stimulus which induces its up-coming continues, but will persist even if the pain disappear into practical indifference. If, in such cases, the content disappear and reappear at no great interval, at this reappearance it may be found to be actually pleasurable. There will, however, be a limit to all growth of pleasure-capacity, variable in different cases, and, on the other hand, recurrence, with great regularity, of the content will be accompanied by gradual loss of pleasurableness. The capacity for pleasure-getting, however, will continue so long as variableness of recurrence exists, so that pleasure will result when there has been failure of appearance in the normal rhythm and subsequent reappearance; and pain of obstruction may ensue if the recurrence be exceptionally prevented. The increased regularity of recurrence, however, will end in a loss of the very capacity for pleasure, unless by a second movement through the same course as described above.[1]

This, I take it, is the psychological statement of the effect of habit in the deadening of pain and in the production of pleasure. I think there is little need here of illustrative examples.

[1] Under the physiological view, growing callousness as to pleasure under continued stimulation is necessitated by the opening up of efferent channels implied in each reiteration of activity, this making the use of the stored force ever more difficult. On the other hand, exercise of a strong form, it will be seen, is necessary for the building-up of the basis of pleasure-getting.

The cravings would imply necessarily over-storage, and hence a preceding case of relative inaction; but we can conceive it possible that a certain time may be required for the accumulation of sufficient surplus to make the obstruction-pain evident, and in certain cases we may expect a sufficiently close accommodative action of the nourishing organs to prevent an over-charge of nourishment. Thus we may see ground for the fact that inaction (real or relative) does not always bring about the painful cravings.

The deadening of pleasure-getting through *habitual activity* is recognised in all regions of mental experience.[1] What are known as "acquired tastes" are more truly "acquired pleasure-gettings" in fields which have been painful or indifferent, and the course outlined in the beginning of the above statement is readily traceable in such cases. One point which involves important results may be worth illustrating. The reader will have noticed an implication that, apart from natural growth and the inherited capacity which that growth brings to light, increase of pleasure-getting in any special line comes only through hypernormal activity, which carries the mental state beyond its pleasurable phase and a certain way into the painful phase, which must follow with continuance of the hypernormal stimulus. The athlete must work beyond the lines of pleasure-getting into moderate weariness if he is to gain growth of muscular capacity and the increase of the satisfaction which will be found in the stronger exercise. He who is learning to smoke or trying to acquire a taste for olives, for example, must go beyond indifference to the beginning of disagreeableness if he is to gain a future satisfaction in the use of tobacco or a liking for the bitterness of the olive. In similar manner, all mental endeavour which is to bring increased ease and increased satisfaction must be persevered in up to the time when the work itself wearies.

These laws of habit, as related to Pleasure and Pain, have been deduced from physiological conditions, which seem to be implied in the hypothesis of which we treat. So strong a corroboration encourages us to look a little further in the same direction before taking up again our more direct line of argument.

Time is an essential factor in the process of organic repair. An organ, having the capacity to store force, and which has been so stimulated that this stored force has been used, will not immediately recover its capacity to act with full vigour. For each organ there will be a certain time after action has

[1] Spencer's explanation of the phenomena of habit as related to pleasurable and painful activities (*Psychology*, i. 579) may be briefly stated thus: Activities which are resisted require to be excited by an extra quantity of feeling ("commonly the fear of pain that may result from non-performance".) "But since the complex discharges through these complex channels render them gradually more permeable, the quantity of disagreeable representation of pain required to excite the actions decreases." This explanation upon indirect grounds seems laboured in itself. Moreover, it fails altogether, so far as I can see, to explain the evidently allied cases of acquired pleasures in sensation (the ordinary "acquired tastes").

ceased at which recurrent activity will be most effective. If stimuli are so applied that the action is made to recur at the exact interval of most efficient condition, and is not induced at intermediate times, we shall have for the organ involved the conditions productive of the most pleasure. It seems highly probable that here we have the physical basis of the gratifications obtained through rhythms. There is a tendency to vibration for the whole system. Music of well-marked rhythm almost invariably causes us to move some bodily part "in time to the music". As Gurney says (*Power of Sound*, p. 128): "We cannot doubt that the pleasure of rhythm is due greatly to the wide range of the nervous discharge, and also to the association of life and expansion, which especially collect around the sense of muscular movement".[1] Thus it is that we are to account for the full pleasures of the dance with musical accompaniment—of mere watching the dance in the ballet—of marching to vigorous music, &c. The same principle may be traced through all Art, so far as it is determined by successive rather than by simultaneous impression. The recurrence of definite elements, in architectural work, of order and symmetry—the vibrating flow of the poet's verse—points to the value of this principle; the application of which may indeed be carried far beyond the simple rhythms to account for pleasurable effects produced in many complex artistic productions. The recurrence of theme in music, for instance, which may be uninteresting if badly managed, gives the most intense pleasure if properly introduced. In such cases we have a feeling of readiness for the recurrence. Rhythmic consciousness, in fact, as thus viewed, appears as a specially marked and orderly species of what are called states of expectation when objectively viewed. If we are able to show, as I hope to do below, that we have found the basis of the pleasurableness which comes with the fulfilment of expectations, we go far to bring into scientific relation the pleasurable data of Æsthetics. There is also a relation of rhythm to pain. The throbbing of acute pain is well known. So far as this is not directly traceable to *pressures* of blood-supply, it is probable that it is indirectly traceable to the *rhythm* of blood-supply, which determines some rhythmical hyper-activity stimulative to the organ directly concerned in the pain-production.

[1] In the light of the able investigations in our day by Münsterberg, it is interesting to note Lewes's suggestion that "the acquisition of the power of attention is the learning how to alternate mental adjustments with the rhythmic movements of respiration". (*Problems, &c.*, iii., § 158, n.)

The intermediate moments of reduced stimulation will enable the pain-giving organ to recuperate slightly, so that rapid deterioration is prevented.

The conditions which are involved in the case of Pleasure make it necessary that Pleasure should ordinarily be evanescent, as it is generally acknowledged to be. For the use of stored force implies the reduction of potentiality, except under special conditions. On the other hand, with stability of content we should expect to find Pain without such limit in time, provided the organ involved retained capacity to act at all, *i.e.*, so long as the content which is painful continued to be present to consciousness. This, too, accords with general experience. Such exceptions to the general rule as appear, I think, are explicable with no great difficulty, as due to those alterations of nutritive condition in relation to action referred to above.

Certain states of mind are determined not by the fixity of content, but by the special manner in which activities appear. If any of these states of mind seem to involve definite relations between activity and nutrition in the organs involved, we should be able to predict the pleasure-pain phase in which they must always appear. Some search in this direction will be appropriate here. We have seen that restriction of normal activities involves wide-spread systemic pain. Typical cases of such restriction are given when consciousness is occupied with our bodily cravings ; — demand for exercise of muscle which has been unusually quiescent ; hunger and thirst which arise when there is lack of normal food-supply ; the artificial thirst which comes to the drunkard ; those all pervasive demands for tobacco and for opium which the habitual user feels when he tries to break up his habit. If these are typical cases of restriction, they are also typical cases of painfulness of a wide character. The important mental state which we call Desire is closely bound to our more bodily cravings. Whatever else there may be in its make-up, it clearly involves a very important thwarting of the impulse to go out towards an object more or less vividly presented. Under such conditions we should find Desire painful, and there can be no doubt that it is invariably so. It is a complex state, however, which involves other elements than those which bring about the thwarting pain, and these other elements which involve pleasure often mask the pain. In Despair where the permanency of the thwarting of desire is emphasised, the pain appears in an extreme form. Aversion is a state kindred to Desire. It involves thwarted impulses relative to our separation from an

object, and should bring with it pain of a broad kind. This pain is always found as part of an aversion, although at times difficult to isolate from other ever-present painful elements; *e.g.*, the painful representation of an object which will be painful if realised. Doubt and Hesitancy[1] are also general states which imply restriction, and are notably painful;[2] and so also Disappointment which involves the thwarting of an outgoing thought in expectation.

In what has gone before we have seen that artificial restriction of an activity which would naturally occur involves a gained capacity for pleasure-getting in connexion with this activity when it does occur. All the states which involve the removal of the restrictive conditions above referred to ought, therefore, to be pleasant,—and such we find them to be. The satisfaction of cravings, the attainment of desires, the fulfilment of expectations are notably delightful. Give the ideal fulfilment of expectation instead of the obstruction of non-expectation with desire and we remove the excessively painful state of Despair, gaining Anticipation which is a very full pleasure. Even where there is a vibration between expectation and non-expectation—*i.e.*, when after Despair we have Hope only—there will be a return of activity which should involve considerable pleasure immediately followed by non-expectation, painfulness. We find Hope one of our most emphatic emotional states, as they are commonly called. This is due, I think,

[1] Cp. W. James, *Psychology*, ii. c. 26.

[2] Prof. Sidgwick in his *Methods of Ethics* (4th ed., pp. 182 ff.) says that he recognises "cravings which may be powerful as impulses to action without being painful in any appreciable degree". He actually speaks (p. 185) of "the neutral excitements of Desire, Aversion, Suspense, Surprise". Concerning surprise I have a word below. Here I must be allowed to say that *I* cannot see how a "craving" can be held to be powerful as an impulse to action without being appreciably painful. As I analyse such states of mind, the so-called neutral excitement which makes the fulness of such states is in mental regions apart from the "craving". With certain of our most powerful cravings, for instance, there are the general conditions of high activity which joy implies—there are certain emotional elements of unrestricted love—and these and kindred states we must carefully eliminate in the consideration of the craving proper. The man who hungers gets an impulse to activities from his painful craving, which activities may so far absorb attention as to cover the craving itself entirely. To understand how Desire, Aversion, and Suspense can appear as neutral excitements to any man, requires the postulation of a degree of "philosophic calm" which has lost Desire in that "apathy" towards which the Greeks aimed, which has displaced all fear by an almost fatalistic trust, and which has learned to feel that, whatever the outcome of doubtful conditions, that outcome must be good.

not so much to its true emotional elements as to the large total effect of Pleasure and Pain involved in the state as above described. Why we always tend to call Pleasure-Pain qualities emotional, I have tried to show in my article (MIND, No. 56) above referred to. Where aversion is involved, pleasurable relief is obtained by a loss of expectation. The attainment of an expectation after a temporary disappointment, even where the pain of disappointment has failed to come into notice; the settlement of Belief after the conflict of Doubt; the Will-act after the strain of Hesitancy;[1] —all have connected with them such wide pleasure as we should, *a priori*, expect to find. The delights of Liberty after Restraint are proverbial.

We have been dealing above with the indirect pains caused by restriction and with the pleasures attained by normal action after unusual rest. If we turn to the pleasures and pains connected with hypernormal activity, we are able to take broader ground.

Attention, from our point of view, may be considered as determined by relative hypernormality of action in the organ involved in the production of the content attended to, the relation to the co-existent activities making up the background of consciousness, out of which the content which is attended to arises. Such hypernormality of action under our theory implies pleasure or pain except at the time when pleasure passes into pain, and then it implies a condition of neutral excitement. Attention is so frequently pleasurable or painful that Dr. James Ward, as we have seen in pt. i., has based his theory of Pleasure-Pain directly upon its effectiveness. It cannot be doubted, at all events, that all states of Pleasure-Pain are states of unusual attention, the more intense the former the stronger the latter. Question arises, however, when we consider those cases of Attention which are claimed to be neutral for long periods, and therefore apart from the momentary neutrality obtained at the moment of passage from pleasure to pain, referred to above. Considerable discussion has appeared not long ago in MIND on this subject under the somewhat misleading title "Feeling as Indifference".[2] Prof. Bain takes strong ground in favour of these neutral states of attention or "excitement" as he calls them. Personal introspection leads me to agree with Mr. Sully that these states of attention are really widely, but dimly, pleasure-pain toned. They often become

[1] Cp. W. James, *Psych.* ii. 529, 30.

[2] MIND, Nos. 48, 49, 50, and 53.

suddenly markedly painful, and this implies that they were previously slightly painful, even though not so recognised. Where excitement seems great and still not notably pleasurable or painful, I seem to note in the state a continuous shifting of ground—new contents in succession, vivid in many cases but without stability of pleasure-pain phase. This shifting of content is indeed implied in the common-sense meaning of the word "excitement". Surprise, which may be called *par excellence* the Emotion of effective Attention, and which Prof. Bain thinks a good example of indifferent excitement, appears to me to present, on the contrary, a distinct corroboration of the position here upheld. For certainly Surprise gives a pleasurable element to the ludicrous, and the general delight in surprises is indicated by the crowds who are attracted to the pantomime and the circus by the satisfaction they obtain in mere clownish novelties.

The mention of novelties turns our attention to another corroboration. Apart from the emotional surprise-component which is not always present, Novelty in most cases implies a shifting of content to regions which have not lately been prominent and therefore the activity of well-prepared organs, the use of stored force. The pleasures of novelty could have been looked for on *a priori* grounds if they were not forced upon us.[1]

Coupled with the pleasures of variety go those of Unity. The emphasis of a common bond between two co-presented objects implies the action upon one organ of stimuli from two separate sources—that is, a hypernormal action in the organ determining the unity. If this organ has been well nourished we should expect the result to be pleasurable; and such we find it to be in a large body of cases. But in many cases of such conjunction of activities, of course, the amount of available force stored up must be small, and we ought to find, as we do, many unities which give us no noticeable pleasures.

General conditions of organic vigour imply conditions of storage, and hence pleasure in Activity when it arises. This is recognisable as to general physical activity, and in the more delicate regions of consciousness covers those so-called

[1] It is to be noted that varieties may become non-pleasurable and even painful. The excessive action which they imply for the system at large should after a time bring general exhaustion and pain. We find ourselves "tired" of ever recurring newness, and longing for rest. That this general exhaustion is the cause of the disagreeableness, is evident from the fact that when we are very tired of variety we find any stimulation disagreeable. We seek repose from *all* stimulation.

cases of spontaneous activity (*i.e.*, action produced by stimuli, so small in degree as to be unrecognised) which are always pleasurable.

Let us turn now to consideration of states involving Fixity of Content. It will be impossible here to give more than a sketch of method and a few instances. To the difficulty resulting from lack of common agreement as to the analysis of mental states is to be added another equally formidable, and one that especially affects our consideration, *viz.*, that the acceptance of the general Pleasure-Pain theory which I defend necessarily implies a considerable rearrangement of mental phenomena in classification, and such rearrangement, of course, cannot be attempted here.[1] As debatable ground must be avoided, omissions which might otherwise be inexcusable may be pardoned. Here the Pleasures of Rest and Relief and the Pains of Restriction will require little attention. For although, as we have seen, they are only for convenience classed apart from pleasures and pains of activity, this special detachment arises from the very fact that the contents of which they are qualities are so shifting and indefinite that we are able to study them only on the wide lines of systemic functioning. In all mental fields, whether Sensational, Emotional or Intellectual, rest after high degrees of tension is pleasurable, and restriction of functioning of which we are capable is painful, in the wide way already described. We shall give our attention, therefore, to the pleasures and pains of active functioning.

If conditions alter or are alterable so that without change of content the relations between activity and nutrition vary, or may be made to vary, we should be able to note corresponding changes in pleasure-pain phase. Fixity of content on its physiological side implies the functioning of the same organs during the time of the continuance of the content. Increase of the intensity of a content therefore implies relatively increased activity of organic functioning,

[1] As an example of this difficulty it may be noted that Prof. Bain treats of certain "Emotions of Intellect". These except so far as they are reducible to Emotions elsewhere discussed by him (*e.g.*, Surprise) turn out to be simply pleasurable or painful conditions. We find it impossible to look upon an emotion as a mere complex of pleasures or pains, and therefore such a classification requires revision from our standpoint. There may be difficulty in deciding whether Anger and Pride are pleasurable or painful, but their emotional character remains. Take away the pleasure and pain from the intellectual state, however, and the "Emotions of Intellect" disappear. This seems to me to argue conclusively against Prof. Bain's classification in this particular.

and this involves changed relations between the amount of action and the capacity of the organ for action. We may therefore rightly demand of our theory some information here.

The examination is greatly aided by one implication of our general theory, *viz.*, that if we can discern laws relative to Pleasure-Pain phases by the study of some one region convenient for examination, we should be able to find traces of the same laws in other mental regions. Clearly, we must begin with Sensation, where as nowhere else we are able to alter at will the relations of activity to nutrition. The study of sensational functioning undertaken with great fulness for other psychophysical purposes has led Prof. Wundt to formulate a law as to the relation of pleasure-pain to increasing intensity of sensational content.[1] He finds that increasing intensity of sensation is accompanied by a rapid increase of pleasure up to a maximum, then by an even more rapid decrease to a point of indifference, and beyond that is accompanied by an increasing pain. This law certainly stands the test of general observation, but requires consideration because of its implicit denial in the assertion occasionally met with that some sensations are painful however low be their degree of intensity and others pleasurable however high it be.[2] To this we shall return after having considered certain other points.

Let us now take again the standpoint occupied in the beginning of this part.

1. As we have already seen, an organ may theoretically have capacity to act which is exactly and only equal to the demand involved in the stimulus that comes to it: and such may be held to be the case where the stimulation to activity is constant. This exact constancy, however, is probably seldom, if ever, reached. On the other hand there will often be a near approach to this equality, and with organs habitually acting to what seem constant stimuli, or to those of regular and rapidly recurring rhythm, we should expect to find a wide region of activity very close to this theoretical equality and vibrating on either side of it.

2. The inconstancy of environmental conditions, however, makes it probable that for the great mass of organs, even where this approach to equality appears, there will be suffi-

[1] *Phys. Psych.* (3rd ed.), i. 511; cp. his diagrammatic representation. Also corroboration by Jas. Ward, *Enc. Brit.*, art. "Psychology"; Horwicz, *Psych. Analysen*, iii. 22.

[2] Cp., for instance, Spencer's *Psych.* i. 272 ff.; also Gurney, *Power of Sound*, p. 4.

cient inconstancy of stimulus to bring about *some* capacity for storage of force however small, and hence capacity for the use of such stored force upon occasion, even though this use may be possible for a very short time only. This storage-capacity will vary in amount somewhat in proportion to the variability of the stimulus and to the importance of vigorous action whenever the stimulus occurs.

3. Whether this capacity for storage exists or not, there is no case in which it is impossible to conceive the conditions existing where the amount of energy involved in the stimulus will be greater than the amount involved in the reaction thereto.

4. All organs which have capacity to and do store force must do so by virtue of a regular or spasmodic supply of nutriment in excess of demand; hence, if the normal action of such organs be restricted, there will at first occur storage, and, when its limits are passed, then obstruction of the processes of nutritive absorption and consequent excessive action widely distributed in those organs producing the movement of nutritive currents. Inherited manner of growth may bring capacity for storage and increased nutrition to make storage possible, even before any distinct action has brought about the call for nutrition.

5. Action occurring after such obstruction will bring about the liberation of more energy than is brought by the stimulus, or, in other words, will use stored force, and this usually in proportion to the amount of the previous restriction of activity.

6. The use of stored force will also occur at the beginnings of hypernormal activity after normal conditions: the amount of stored force, however, occurring without abnormal restriction will not be relatively large, hence in such cases will be soon used up.

7. Stimuli which involve more energy given than can be reacted to, if continued, will not be followed by a reverse condition, unless in abnormal cases there be a sudden inflow of nutriment. On the other hand, where stimuli involve less energy than that of the reaction, and are continued, the disproportion will decrease as the stored force is used-up, and then the relation of energies will be reversed, as we shall see below. Where the action of stimulation is greater than the reaction, a reduction of intensity of stimulus may bring the two into equality; but, unless the stimulus is discontinued and rest supervenes, or a sudden increase of nutriment take place, there can obtain no condition where the reaction is greater than the action of stimulation.

8. If an organ be acting approximately in amount just up to its capacity, increase of amount of stimulus will involve the use of such stored force as it has (which, of course, may be practically nothing). After this has been used so far that the energies involved in both stimulus and reaction are equal, continuance of the hypernormal stimulus will involve conditions where the energy involved in the reaction will be less than that involved in the stimulus; and as the hypernormal stimulus continues or increases, the over-proportion of energy involved in the stimulus will increase rapidly.

Let us translate what has gone before into psychological language, and at the same time look for correspondence with facts of experience:—

1. *Indifference: A state which is neither pleasurable nor painful is theoretically possible, but, strictly speaking, will probable be seldom reached. On the other hand, a condition, varying so slightly either towards pain or towards pleasure as to be practically indifferent, will be very often reached, and, in fact, will be normal for most states of consciousness, which are determined by systemic activities.*

Of Indifference, in general, enough has already been said. The fact of Indifference is acknowledged in the mere statement of the problem. The real question at issue is whether Indifference is a special state of mind of wide extent, and which excludes pleasure and pain; or whether it is a quality determined by those nicely balanced conditions which are intermediate between those productive of pleasure and those productive of pain. I do not see that experience denies this last statement to which our theory would force us. One thing, at least, is certain as regards the matter of Indifference: the phase discoverable in Sensation is traceable throughout all mental regions where there is fixity of content. There are Emotions, as we have seen, which are so usually indifferent as to lead to the claim that they can never appear otherwise. Our normal life of thought is often apparently totally devoid of either pleasure or pain.

2. *Apart from the theoretical indifference above referred to, any content may bring pleasure under proper conditions, although the pleasure may be of very low degree and of very short duration. The capacity for pleasure-getting in connexion with any special content will depend upon the variability of the appearance of the content in consciousness and upon its importance in the life of the individual.*

Any Sensation can be felt pleasurably if the organ involved be well rested and the action be not too suddenly

increased. If some sensations appear to be disagreeable even at their lowest intensity, it is because we cannot easily induce the action at a sufficiently low degree for experiment, attention being retained; or because the conditions of storage in the organs involved are inappreciable in consequence of the constancy of stimulus.

It is, of course, impossible to apply experimental conditions to show that pleasure is possible in connexion with action in *all* organs. We must content ourselves when we have noted that many states of common occurrence, which are supposed to be always painful or indifferent, may, if properly conditioned, be pleasant. The ordinarily indifferent rhythms of breathing are made pleasurable at the moment of increased activity when we move with vigour. Any spark of light is pleasant after some moments spent in the darkness of a mine. After complete silence any sound delights the ear, entirely apart from implications of the sound. I remember once to have been aroused from serious thought in a railway journey by a delicious odour, and the words, "What a delightful perfume!" were actually formed in thought. Almost immediately the smell changed to disagreeableness, with growing intensity, and there appeared evident the nauseating smell emitted by a skunk killed by the train. A surgeon, who has given much attention to the surgery of the foot, told me incidentally that he had noticed the odour from a well-cleansed foot to be actually pleasant, notwithstanding the extreme disagreeableness of the odour when strong.

Fear is generally looked upon as a most painful state. It can, indeed, with difficulty, be separated from spasmodic painfulness. If, however, we pay close attention to the muscular components of fear, which are the special psychic elements which fix the state, I think it not impossible to trace it in a pleasurable phase. Let one walking in the darkness and hearing footsteps behind him *deliberately* quicken his pace, he will catch the beginnings of the marked components of Fear, but not unpleasantly. There is a well-known fascination which leads boys and men to go as near to dangerous things as they dare, and then flee from them. Fascination implies pleasure-getting out of the performances involved.

Hatred-Anger are usually looked upon as painful, so much so that Prof. Bain has felt it necessary to argue at length that there are pleasures obtained through malevolence.[1] I think his position in this regard cannot be gainsaid.

Most thinking, it appears to me, is mildly pleasant.[2] Where it is indifferent or painful we divert our thoughts: that is, we restrict the appearance of a given content, which has become too constant, so that when it arises naturally after a time of rest the pain is gone, and we grasp the thought as we do only when we are gainers of pleasure.

3. *There will be no case in which a content cannot appear in painful phase if the intensity of its presentation be sufficiently great.* I know of no sensational experience which, even if

[1] He has on his side Aristotle (*Rhet.* i. 11) and Plato (*Philebus*).

[2] Cp. Sidgwick, *Methods of Ethics*, p. 125, in corroboration. Von Hartmann, it must be noted, holds that the relation of two ideas seems to be absolutely indifferent up to the line where the intensity of the *Vorstellungen* becomes so strong that pain ensues (*Aesth. seit Kant*, 289).

pleasurable normally, cannot be experienced disagreeably if intensity be increased or prolonged. What is more, there are many sensations very nearly indifferent as a rule, and scarcely traceable in pleasurable phase which may appear painful in the extreme, under serious over-exercise.

The conscious states connected with the intestinal activities are so far indifferent that they are out of attention until some time when subject to excessive stimulation they give excruciating pain.[1] We gain here an explanation of those cases of disease which bring pain in regions in which we otherwise appear to be without sensation. In normal health these organs work in a reflex way with indifference, and so far as their concomitants come into consciousness at all they do so merely as part of the background of our mental life. They have no power to store force, so that under hypernormal stimulus they at once bring about a phase of pain. Mr. Spencer, as already noted, has taken the ground that there are certain sensations, such as sweetness, which can never be disagreeable however intense they are. It may be that certain tastes which are usually pleasurable are so identified in name with the pleasurable quality that the observer will fail to use the same term in describing the painful phase of the same content. But Mr. Spencer's illustration is not a happy one. Sweetness, if intense, is exceedingly disagreeable to some people within my experience, and even I, who am ordinarily fond of sweets, find no difficulty in obtaining pain from an excessive stimulus in this direction.

Turning to other than sensational fields: Joy is looked upon as a typical state of pleasure-getting, and justly so. But for all this usual connexion with pleasure, excess of Joy brings an exhaustive pain from which often the name Joy may be altogether detached, although "a joy which is almost pain" is a recognised state. Love is thought of usually as pleasurable, but its enforced continuance brings satiety-pain, and, like all pains, induces aversion. Thus the wisdom of instinct and of racial habit makes it usual for those who love to avoid absolute continuance of companionship. And looking beyond Emotion, we see that any content of Thought if steadily presented with intensity becomes painful. Thus Mrs. Browning in one of her sonnets says:—

> "Oh, entertain (cried Reason as she woke)
> Your best and gladdest thoughts but long enough
> And they will all prove sad enough to sting".

If we step beyond the normal we may instance the severe pain connected with those morbid cases of *idée fixe* which seem to present the typical disease of Attention. In cases of excessive weakness caused by illness, or in cases of depression of circulation, such as occurs with sadness, we should expect the organs of thought to be in poorly nourished condition. Under just such circumstances we find it painful to think; we naturally allow the movement from image to image without attention. Any thought which involves attention we find painful. And so when we have been for a long time mentally active. The tiredness is hard to define, difficult to isolate, but we find this certainly, that the painful tiredness comes with thought in the direction in which we have been active. Thus we find that change of direction of thought is

[1] Cp. on this general subject Mantegazza, *Physiologie de la Douleur*, pp. 109 and 110.

ordinarily efficient to remove the pain. Still in cases where the activity has been long continued, where we may presume that the surplus energy has been in general exhausted, we find, as we should expect, pain in thinking in general, which can only be relieved by total rest from thought.

4. *In proportion to the pleasure-giving capacity of a content there comes into existence a wide pain if this content's appearance in consciousness be abnormally restricted. Broadly painful states which indicate capacity for special activities may arise at times before the special activity has been stimulated or experienced.*

The teaching here (1) is, that any pleasure which has been experienced may be craved;[1] and that in general the strength and pain of the craving is proportionate to the amount of pleasure which it is possible to gain in any special direction.

In Sensation this requires no illustration; nor in Emotional or Intellectual activity, if we acknowledge the essential bond between craving and desire. Even in cases where pleasure-getting is weak we experience cravings. Children and the less intellectual of men crave the experience of anger of a low degree, and hence probably the beginnings of the simulated anger of games among children and the contests of men; the represented delights of triumph being secondary. The craving to experience the stimulus of fear leads to the braving of dangers, where there is no incentive in imitation or applause. Surprise is craved notably by children. The thinker whose habit of attention to his thought-sequences is interrupted finds himself experiencing very much the same indefinite uneasiness which the active man feels after prolonged muscular restraint.

We learn (2) that cravings may arise apart from their known object—indefinite longings for what one knows not, the outcome of restriction in nutritive courses which are urged to activity by stimuli too dim to be recognised and are connected with the natural processes of inherited growth. Notable instances are those vague feelings of physical uneasiness which are the common experience of both sexes when they reach the age of puberty. Cravings, desires imply capacity to act effectively and with pleasure, and this brings us to our next point.

5. *All appearance of contents occurring after such restriction, as has just been noted, will be pleasurable in some degree, and usually in proportion to the degree of anterior cravings.*

That is, all satisfactions of cravings and desires are in themselves pleasurable, and the vividness of the pleasure gained

[1] Kant held that what has Interest must be considered beyond the field of Æsthetics, and based his theory upon the fact that Interest always has relation to capacity for desire.

is in general proportionate to the strength of the craving or desire which has preceded. I think there will be no question raised as to the validity of this law in its widest range.

6. *All beginnings of vivid appearances of contents which have been before present in consciousness will be pleasurable in some degree (excepting the narrow region where pleasure-capacity is practically lacking); though the pleasure will be of short duration unless there has been a previous time of non-appearance. This necessarily carries with it the implication that pleasure is not always determined by antecedent artificial restriction of rise in consciousness, but may be determined by simple increase of intensity of content.*

Pleasure is not always mere satisfaction of desire, as has been so often held. All use of stored force will bring pleasure even if the elements brought into action have not reached the limits of storage and have not brought craving-pain.

Our ordinary sensory field as it appears in consciousness has, it seems to me, the slight balance in favour of pleasure which comes with such beginnings of activity. Our senses are constantly changing the scope of their activity in small ways, and with the change comes slight pleasure. Apart from our sensations, which are determined directly by environmental stimuli, the great mass of our conscious states seem to me to have this slightly pleasurable tone where they flow easily and are not forced through habits of attention.[1] Spontaneity (so-called) under this theory implies pleasure: and I think common observation bears me out in this respect. Wide fields of low-grade pleasure-getting thus reached form the groundwork of Æsthetic effects; although cravings and their satisfactions are used as making centres of interest (note, *e.g.*, the use of discords and their resolution in music). I think it can be shown that the characteristic result in Æsthetic work of high quality depends on (1) production of a background of pleasure by movement over varied fields where faint pleasure is possible, (2) the use of this ground as the setting for pleasures rendered vivid by the production of storage-conditions, (3) the bringing into use of the capacities thus made possible just at the moment when the maximum capacity for pleasure has been reached and before the pain of craving has begun to accrue,—although, as noted above, the production of this very craving is allowed as the certain mark that the pleasure will be felt at its maximum.

7. *Apart from certain very exceptional cases, contents, if painful, will not become indifferent nor pleasurable if their intensity continues or increases. On the other hand, if a content be pleasurable, continuity or increase of intensity will result in decrease of the pleasure until it reaches indifference and is replaced by pain. In a great majority of cases reduction of intensity will reduce pain to indifference, but never into pleasurableness unless the*

[1] Cp. again Sidgwick, *Methods of Ethics*, p. 125.

content disappears (positively or relatively) for a time from consciousness.

Once in a while we experience slight active pains which without change of content turn into pleasures of low degree without perceptible reduction of the stimulus. "We get used to the pain," we say. Such cases remind us of the "second wind" which athletes tell of, evidently produced by the starting-up of nutritive conditions which are in excess of the demand, and which therefore not only build up the wearied nerve, but place it in conditions to react in higher degree than the stimulus demands. Many methods in therapeutics aim to break down acute pain by supplying additional nutriment to the affected organ rather than by attempting to reduce the cause of excessive stimulus. Such cases of pain-reduction without reduction of the intensity form however the exception which makes prominent the rule that we must decrease activity if we are to decrease the painfulness of the content presented. The reduction of painfulness by the process of intensity-reduction may bring us to the point of indifference, and the reduction of intensity may be such as to involve the disappearance of the content from consciousness, but mere reduction of intensity cannot normally bring about effective activity and the attainment of pleasure which goes with it, unless there has been a period of rest—a period of disappearance of the content involved.[1] That continuance, or even mere increase, of intensity where we are getting pleasure eventually brings reduction of that pleasure; also that reduction of intensity where we are gaining pleasure reduces the pleasure,—are conclusions involved in our theory, and the commonplace acknowledgment of this is found in the general and unquestioned recognition of the evanescence of all pleasure. This requires no illustration.

8. *Increase of intensity, where a content is indifferent, may at once produce pain, but normally it will at first produce pleasure, which may last but a moment and be scarcely traceable, and which in any event will rapidly disappear, if the increased stimulus be continued, until indifference be again reached, when it will begin to be painful, and this pain will rapidly increase.*

The last statement covers the ground of Wundt's law, to which reference is made above, as I interpret it. I think its truth cannot be challenged. As here stated, it appears only

[1] This is in thorough accord with the facts which, as we shall presently see, Prof. Sidgwick presents as an objection to Wundt's law, *viz.*, that certain sensations remain disagreeable under reduced intensity until they become indifferent and then vanish.

as the partial application in the circumstances most often met with, of a simpler law of wider import.[1]

We shall find, I think, various other positions incidentally proven in the points which have been already made. That, in cases where the capacity for pleasure is non-existent or of very low degree, an immediate change from indifference to pain will occur is evident under our theory, and is illustrated under point (3): the normal course, however, is as Wundt states it. That in all cases likely to become subjects of attention there is some capacity for pleasure, we have seen in discussing point (2). That increased intensity of stimulus will in ordinary, therefore, bring the content from indifference into pleasure-phase was shown in discussing point (5). That this pleasure-getting, so far as it is at all possible, will rapidly increase with increased intensity of stimulus is an implication of our theory, and a fact which I think will not be denied. To increase a pleasure obtained in action in any mental region we always increase that action.

[1] Prof. Sidgwick, in *Methods of Ethics*, p. 182, has incidentally denied the validity of Wundt's law, as he understands it, thus: that all disagreeable odours and flavours may be made positively agreeable by diminution. "I find," says he, "some disagreeable until they become indifferent and then vanish." But Wundt's law, as seen from our standpoint, refers to the *increase of intensity*, and means that, if under such increase the stimulus is not too high in degree, *in the rise from indifference* pleasure will be noted before the advent of pain. Furthermore, our view, as stated above immediately before the deductive statement of Wundt's law, would show that *decrease of a stimulus which was giving pain* could not (except in very exceptional cases of increased nutrition) do anything but produce sensations which would be "*disagreeable until they become indifferent and then vanish*".

Before leaving this matter, I cannot help calling attention once again to the errors involved in the ordinary way of looking at pleasure-pain phenomena. Prof. Sidgwick's positions would scarcely have been reached, I think, had he not been imbued with the general notion of modern psychology that feeling is a form of mental experience *sui generis*, involving, perhaps, action in special brain-seats; for how else can he hold it to be an objection to Wundt's law, referred to above, that "pains of shame, disappointed ambition, wounded love, do not appear to be distinguishable from the pleasures of fame, success, reciprocated affection, by any degree of intensity in the impressions or ideas accompanied by the pleasures and pains respectively"? The implication of Wundt's law in this connexion, in my view, would not be that the difference as to pleasure or pain in these regions of various content implies difference of intensity, *per se*, in relation to some general standard of intensity, but that, if the content does not alter, changes from normal condition ought to cause the appearance of the content in other pleasure-pain phases than such as are normal. Thus we should look for pleasure in shame, ambition, and love (well known), and for pains in fame, success, and sympathetic attachment (less known, but, I think, traceable).

But too well do we know that we cannot increase pleasure indefinitely by this process. As we have seen in discussing (7), the increase of pleasure soon reaches a maximum, and then begins to decrease until we reach a state of indifference. After a period of indifference comes pain, increasing indefinitely till exhaustion brings entire disappearance of the content.

This course, discovered in Sensation, appears through all regions of mental activity *where the content does not change;* a point which must be kept constantly in mind in such introspective examination, for, automatically, we tend to shift our field as soon as pain begins to be felt. Our consciousness reaches out naturally to new contents which do not involve pain, unless there be a continuation of stimulation from without, which compels the continued attention upon the same content. This fact makes it very difficult to trace the change of painful intensity in states not due to external stimuli, which we are able to govern. In Emotional life we have a corroborative example in Fear, which, when continuous and extreme, ceases in exhaustive inaction, even though the object of fear still be present. The same thing is exemplified even in the higher regions of complex Thought. The most reliable corroboration here is found in the morbid continuance of *idées fixes*, which certainly become painful enough, and remain so as long as they are able to hold themselves in consciousness. In general, the influence of *excessive* action is recognised in the painfulness of extreme intellectual effort. But with such mental states, we must confess that corroborative evidence cannot reach very far.

Let us now proceed by another method. In an indirect manner we may gain corroboration which approximates to the test of experiment, by examining those means adopted for the avowed purpose of gaining pleasures and avoiding or lessening pains.

All men seek pleasures, and, where the search does not bring them naturally, endeavour to produce them artificially. We ought to find, therefore, that the steps taken to procure *pleasure* are such as will increase the use of stored force. We have learned in the guidance of our children to give them unusual rest before taking them to gatherings where prolonged pleasure-seeking is attempted, and we ourselves tend to take the same course. The use of well-rested organs is the basis of the pleasure-seeker's universal search for *novelty*; not absolute newness, but new arrangements of activities which have been customary, but not lately repeated; restoration of stimuli which for some time past have not acted upon us. I think it can be shown also—but the task cannot be undertaken here—that the delights obtained in the repartee of wit are in the main explicable as due to the repression of the suggestion of mental fields, well connected with those primarily empha-

sised, until the former are most fully prepared for attention: these then, when brought into consciousness, appear with full flow of pleasure. This principle of artificial rest is of constant occurrence in the production of æsthetic effects, for example, in the principle of contrast; but discussion of such points would lead us too far from our argument, and must be reserved. Another common method of producing pleasure by artificially increasing the capacity of organs appears in the pleasure-seeker's deliberate excitation of the general action of the nutritive system by alcoholic or other means, so that the ordinary stimuli of our habitual environment will produce exceptional reaction. On the side of hypernormality of stimulation it may be noted that the pleasure-seeker always tends to excesses. Thus he seeks out excitements which involve all his powers of intense attention in certain directions for a limited time, and again between these periods of excessive attention turns to the principle of rest, to small talk, or perhaps to eating sweets—a habit of theatre-goers, which, Aristotle[1] tells us, was common even among the Greeks when they found the action palling upon them. The delight with which the jaded pleasure-seeker turns to puns and sensuous if not malicious story-telling is familiar to all: and this species of delight is explicable, I think, as due to a sudden change of mental activity from channels where effort is required to complete the flow of thought into others well prepared for activity, *and in which a relatively small stimulus produces great proportional effect;* or, in other words, *in which the amount of energy involved in and transferred from the first mental field produces much more than normal stimulation in the second field.* This is the principle of the Ludicrous, which cannot be elaborated here.

We have learned that the man who by over-work has lost all interest in things, all capacity for enjoyment, has exhausted his system as a whole, and needs entire rest if he is to regain this lost interest. We have learned that loss of interest in one special line of activity is to be regained only by working in new lines, to the exclusion of the one in which we have over-worked.

It thus appears that we are able to produce Pleasures artificially by producing the conditions of pleasure which we have described. How is it in the matter of Pains? It is certainly true that the pleasure-seeker who depends upon excesses of stimulation for the attainment of his end finds

[1] Aristotle, *Nicomachean Ethics*, bk. x. ch. 5.

his pleasure waning and his excess ending in painfulness. The torturer depends upon excessive stimulation to give pain to his victim; and the surgeon to relieve pain in some region resorts to excision of the nerve which is producing the abnormal stimulus, or to what he calls counter irritation, *i.e.*, the production of wide painful irritation of low degree in adjacent parts, which implies exhaustion of the activities in the widely distributed nerve-tracts, hence a general reduction of stimulation in the region productive of the severe pain. It seems to me that not dissimilar is the psychological basis of the elimination of pain, and incidentally of such cures as are effected, by means of Hypnotism and by the closely allied methods adopted by the practitioners of "mind-cure," "faith-cure," "Christian Science," &c., &c. The procedure may be looked upon as psychological surgery, if we may so speak. Attention *away from* painful activities, whether produced by Will or Belief or Command, implies strong activity in physical regions other than those which give the pain, and therefore a reduction of the stimuli to, and activities in, these latter regions, which if only moderately diseased may recuperate during these seasons of rest.

I have in pt. i. made a criticism against others which my reader is certain to turn against the theory here defended. 'Can you convert *your* propositions,' he will ask, 'without depending upon the presence of the pleasure and pain themselves for proof of the existence of the conditions which you think determine them'? We of course cannot hope to examine every instance, nor to cover all mental fields in detail: no theory pretends to such completeness. Such a criticism as Mill's against Hamilton can indeed only be maintained where, as in the case in point, a great proportion of cases fails of proof. We may hope, however, to obtain sufficient positive evidence to raise a presumption in favour of our theory without serious unexplained oppositions, and this, in my opinion, has already been accomplished. Still we must not hesitate to meet the above query directly. Can we properly maintain that *All pleasure is the coincident of the use of stored force*, and *All pain the coincident of conditions where the energy of reaction is less than that of the stimulus in the organs whose action determines the content in each case?* The answer, I think, is to be found in what has preceded this.

The correctness of the statement as to Pleasure is shown by the acknowledged universality of the law that pleasure (content being unchanged) is always reduced by continuance of hypernormal stimulus. This points to something used-up.

What it is that is used-up is indicated by the acknowledged law that abeyance of a content, *i.e.*, rest, must precede pleasure-getting in connexion with the content; rest implying the accumulation of potential energy in the organ involved: corroboration being found also in the fact that decrease in amount of pain-giving stimulus does not bring us back to pleasure-conditions *in connexion with the same content*, unless the condition of rest supervenes.

With Pain the proof is at first sight less clear, but our thesis is implied in the law that pain always arises where the presence of a hypernormally intense content is continuous, after such pleasure as can be obtained has become reduced to indifference: and, although this law is not as fully acquiesced in as the Pleasure-laws above noted, I think the exceptions upon which objection is founded are explicable on the lines laid down in the discussion above. We have further proof in the fact that rest from activity (implying organic repair) is the recognised means of bringing reduction of pain in any special direction; that increase of a stimulus which is bringing pain increases the pain; that increasing ineffectiveness is recognised as an accompaniment of continued painful action in an organ.

Having occupied ourselves so long with physiological conceptions, it will be a relief to the reader, I do not doubt, as it is to myself, to turn for a moment to Psychology proper. Pleasure-Pain, I have argued, are qualities which *may* belong to any state of consciousness. We should be able to bring these phenomena into relation with such qualities as *must* belong to all consciousness, and thus obtain a definition in purely psychological terms.

In a manner Wundt's law does this with reference to Intensity. Let us see whether we cannot state the laws of Pleasure-Pain in terms of Attention.

Pleasure under our theory, as involving the use of stored force, implies a continuance of activity in the organ of the pleasurable content, and therefore a tendency to continuance of Attention upon that content. It implies also an increase of activity in directions connected with the pleasurable content as developments, and this total result may, I think, be called, in the words of Dr. James Ward, "effective attention".

Pain, on the other hand (and here we can scarcely be said to follow Dr. Ward), implies a tendency to cessation of activity in the organ of the painful content, and therefore the disappearance of that content. The continuing stimulus may indeed force the up-coming of the content, but there is no

spontaneity in this up-coming. At the same time the lack of efficient outcome of the stimulus in the direction which gives us the pain will determine a transfer of energy to new channels above (so to speak) the channel which leads to the organ which gives pain, a process which the conservative tendencies of nature will emphasise. This means the production of new foci of attention—the frittering away of attention so far as the painful content is concerned.

It may be well to note here that, on the one hand, the spontaneous activity in pleasure implies a diffusion of activities in the lines of the development of the pleasurable content, while, on the other hand, the activity connected with pain implies new activities in lines apart from such content, *i.e.*, the production of collateral activities in both cases. It is easy to see that nature may turn these different activities to her own conservative uses in directions which shall look to continuance of the activity which is pleasurable (for the use of stored force must be a saving to the system at large), and to a discontinuance of the painful activity (which is draining the efficiency of the system). These tendencies, however, will be *results* gained in the course of development, and not characteristics inherent in the pleasure and pain themselves. Enough examples of these tendencies appear perhaps to warrant the *suggestion* that "Pleasure" may be "a feeling which we seek to bring into consciousness and retain there," and that "Pain" may be "a feeling which we seek to get out of consciousness and to keep out," but I do not think we are warranted by any means in saying—as Mr. Spencer does, (*Prin. of Psych*, i. ch. 9)—that the longer phrases are *equivalents* of Pleasure and Pain respectively.

It will be well now to look back at the theories reviewed in pt. i., to note their relation to that here defended.

The theory which connects pain with violation of limit we find correct so far as excessive activity is concerned, and we find the pains connected with the violation in the direction of sub-normal activity or non-activity explicable in terms of excess. The related theories which connect pleasure with replenishment, or which make it dependent upon approach to equilibrium or to normal activity, are based upon facts of pleasurable rest, which we have seen to be secondary and not fundamental. The notion that pleasure is mere absence of pain is denied by our theory: the pleasures so closely connected with contrast being seen to be, not merely negative, but positive states connected with effective activities of other contents than those with which the pain was connected. That pain is always due to restriction of activities we find to be true only if we use the word 'activity' improperly with two distinct significations: (1) as related to the organ involved in the painfulness, and (2) as related to the organism as a whole: the foundation upon which both rest we find to be the condition in the organ

giving the content where energy of reaction is less than energy of stimulus. That pleasure is *always* due to action after restriction we find to be not true, although under such conditions the most vivid pleasure will necessarily arise. The Herbartian view appears as a partial truth, in that opposition of presentations must produce pains of activity in wide mental regions, and in that support of presentations implies confluence of stimuli to the increased activity of the organ, which is the concomitant of the content's appearing pleasurably. The theories which connect pleasure with effectiveness and pain with non-effectiveness of activity we find to be fundamentally true, although requiring radical restatement; the failures involved in their statement as heretofore made being due to the current misunderstanding of the nature of pleasure-pain, and to a reference of the effectiveness or non-effectiveness to the organism as a whole instead of to the special organ or organs involved in the production of the content of consciousness. The law of "self-conservation" we find to be a secondary law which relates to the distribution of pleasures and pains, and which is dependent upon general laws of the evolution of organisms. Evolutionists will at once see how this theory accounts for the connexion, in a broad way, between Pleasure and Pain and activities respectively advantageous and disadvantageous. For those who use stored force (*i.e.*, gain pleasure) in connexion with activities which are *advantageous*, and who find powers curtailed by lack of organic efficiency (*i.e.*, suffer pain) in connexion with activities which are *disadvantageous*, will evidently prove successful where the struggle for existence is dominant in determining the direction of evolution. It is equally clear, however, that this connexion can only be on very general lines, and will be marked by numerous exceptions such as we find.

Pleasure and Pain are so closely related to all mental phases that all Hedonic theory must necessarily have relations of an important nature with all other sciences which are fundamentally psychological. Hedonics cannot be severed from Ethics, from Pedagogics, from Æsthetics. The relations of this theory to these three sciences need to be traced in a manner which cannot be attempted here. In relation to Ethics, it teaches that the *act* of will, *per se*, is pleasurable as the outcome of the conditions of opposition which are anterior to the will-act. Further, it appears that action in the direction of the greatest desire (*i.e.*, away from the fullest craving-pain) is the most pleasant action, *apart from*

co-existent but not directly related elements of consciousness. But this does not show that the effect of habit may not be such as to lead to action against the strongest desire and away from the greatest pleasure. Further, it appears that the object of desire is not related directly to the production of the painfulness of restriction, which is determined by elements apart from those active in defining the object. Further, that although the *attainment* of a desired object will be pleasurable, the representation of this attainment will not necessarily be so; in other words, that the object of desire, whilst it may be, is not necessarily the attainment of pleasure. Further, that the satisfaction of desire is not the only means of overthrowing desire-pain,—but that persistent encouragement of activity in not closely related regions will lead to a loss of capacity in the organs formerly in active use and a loss of the craving which that capacity carried with it.

In relation to Pedagogics, we have the important corollary that as pleasure implies capacity to act towards an end (if not always to reach it), so desire is an indication of capacity; that aversion or painfulness in accomplishment is not only an indication of ineffectiveness of effort, but a mark of positive loss to the power of the system as a whole. That while exercise in a given mental region, up to and a little beyond the line of painful effort, is of importance for progress and for the growth of effective character, in the main the teacher's effort should be to produce *desire* in the direction of studies in which it is advantageous for the pupil to engage, and to look for pleasure in such studies as the most certain mark that attainment is being effected.

In relation to Æsthetics there should be much to say. If, as I think can be shown, Æsthetics is a branch of the wider science of Hedonics, we should be able to develop formal Æsthetics from the general Hedonic principles here sketched out. The subject is so wide, however, that it cannot be even touched upon now.

III.—THE FESTAL ORIGIN OF HUMAN SPEECH.

By J. Donovan.

It would not be a difficult task to induce any student of the speech-branch of anthropological science to take a serious interest in aboriginal music, even if he were offered nothing but the disjointed exclamations of surprise made by travellers among contemporary savages and by ancient writers at the intimate connexion which music has formed with the very roots of mental and moral culture. To observe that at the first glimpse which history obtains of men who had raised themselves above their fellows to the dignity of religious, moral, and scientific teachers, they are found to be called *singers* is sufficient to create an intellectual reverence for things belonging to aboriginal music, if we went no deeper than the bare notice of the fact. An interest has long been growing in matters connected with aboriginal music through the sheer force of the reputation of the art as an accompaniment and supporter of mental culture, and not by reason of any confident insight into its psychological roots. The results of philological and archæological research, and the queries and guesses made about the power of music by philosophers from Aristotle downwards, have been paralleled in such a remarkable way by travellers among contemporary savages that the bare weight of ancient tradition and modern ethnological fact could not help tending to raise music into a high place as a factor in the evolution of mind, though psychology furnished no interpreting guide. But for an indirect evidence of the intimacy of the connexion between early speech and music, nothing could be referred to more striking than the fact that the intimacy of this connexion has encouraged Mr. Herbert Spencer to turn to speech and load the unsolved problem of its origin with the further problem of the origin of music. Now, although a close scrutiny of even the historical aspects of musical pleasure may be calculated to make one feel that making a beginning in music must have required less advanced and complicated psychological machinery than making a beginning in speech, it is undeniable that an easy glance at these historical aspects suggests the contrary. But I believe that neither a close nor an easy scrutiny of the psychological aspect of musical pleasure will lead one to any conviction except that

its origin required simpler psychological machinery than the origin of speech. Indeed I think it will be found that the origin of speech was only possible through the aid of the psychological machinery which belonged to musical pleasure.

If we begin by comparing the ear with the eye in respect of their relative contribution toward making up our mental life and activity, the eye must suffer by the comparison, although it is usual to regard it as the most intellectual of our senses. The superiority of the claims of the ear in generating the peculiarly human characters of mind rests upon its functional passivity. The extreme ease of the animal's control over the eye and the absence of any control over the ear made a difference in the degree in which the common animal appetites dominated the manner of the reception of the two kinds of sense-impression. The passivity of the ear allowed auditory impressions to force themselves into consciousness in season and out of season, when they were interesting to the dominant desires of the animal, and when they were not. These impressions got further into consciousness, so to speak, before desire could examine their right of entrance than was possible for impressions which could be annihilated by a wink or a turn of the head. And the more attention any impressions could command without there being anything beyond them of interest to the animal's life-caring instincts, the more likely were those impressions to lead to the origination of one of the chief human powers of mind, that of grasping more than one impression and becoming aware of a relation of difference between them. The subjection of the eye to life-caring interests must place it below the ear in any speculation about how a beginning was induced in the apprehension of relations of difference between sensations, however superior the eye became when the beginning had been fairly made. But, granted that the ear was a possible channel for educating the consciousness of some animals up to this power, where could the stimulating influence come from? The natural stimulants of the organ could not have changed radically, at any time, from what they were in all ages of animal life: why, therefore, should they begin at any particular time to educate the consciousness of the ancestors of man? or why do they not educate that of other animals which possess highly developed organs of hearing? These are the sort of questions which are in fairness put in the way of an attempt to show how any of the specially human characters of mind could originate without assuming that other characters existed

already. And, whether comparative psychologists are justified or not in supposing that their constructive schemes of the origin of the human mind meet and answer such questions, I think that there lies still untouched a mass of important historical and ethnological facts which are better able to answer them than any which have been yet brought forward. But it is necessary to bring these facts into the light of certain psychological suggestions which are offered by a new analysis of the art of music. The solution which is possible along the lines of this analysis avoids all the old difficulties which stood in the way of a beginning in mental training when the animal's impulse to educate itself was thought of only in the blind seeking for the satisfaction of natural appetites. If the impulse was an old, naturally-working one, which is common to many animals, it could not face the questions, why it did not begin its work sooner, or why it does not effect it in other animals. The impulse behind the effort in mental training to which attention is invited here was free from every kind of self-caring stress. It was intensely pleasurable, yet not an old animalistic pleasure. It was the incipient pleasure of music.

The facts of history and ethnology which may be given a new aspect when regarded in the light of the analysis of music cover a very wide field of the early manifestations of human thought and emotion, beginning with the first and rudest vestiges of communal sympathy and tribal glorification, and extending up to the national song or epic. In order to work down to the root of these facts quickly, it must be observed that, while communal interest itself is not peculiar to man, it is peculiar to man to give expression to this interest in a way which has nothing to do with life-caring instincts. Now what is the rudest and most primitive manner in which man is found giving expression to a communal interest apart from practical co-operation for the care of life, hunting and fighting, &c.? The most ancient traditions of the races now civilised and the ethnology of still uncivilised races give the same answer. The communal spirit of man finds its first and rudest expression in the bodily play-excitement which is found in all grades of development from that of the lowest Australian or American aborigines up to the choral dance out of which the first glorifying songs of the race and its heroes are found growing. Certainly we cannot catch sight of this play-excitement in its first spontaneous outlet; at the lowest grade in which the manners of its outlet are found, they had already become manners of racial tradition, and had become involved in the peculiar racial habit of

festal celebration. But (1) bodily play-movements in imitation of actions, (2) rhythmic beating, (3) some approach to song, and (4) some degree of communal interest, display themselves as the most constant elements of all festal celebrations. The degree in which the play-excitement is infused with a spirit of communal interest seems to vary considerably in different tribes, but if we start from the generally-accepted explanation of play-movements in animals, and grasp the ultimate reason why play-excitement became infused with the communal spirit, there will be no difficulty in tracing evidences of this spirit even where they are most hidden by accompanying habits. When the strain of action resulted in the satisfaction of the chief animal desires and the play-movements of the pleasant nervous reaction drifted into the manner of the actions that brought about the satisfaction, it was impossible that some of the communal interest which lived amid the actions should not be resuscitated in the play. Few will deny that this is how play-excitement drew communal interest up from its lower animal grounds of life-caring instincts to the distinguishing human habit of expressing this interest apart from actual life-caring co-operation, even if they deny that the event was important in its consequences. And, if it is kept in view while the most familiar phenomena of aboriginal festal celebrations are recalled, it will be perceived that fact verifies this simple interpretation of the connexion between play-excitement and communal interest. In the chief ethnological works, festal celebrations are often placed under the heading of "amusements" even when they display not only a communal interest, but also a pronounced religious spirit. In thus classifying these habits the ethnologists are obviously influenced by the large element of seemingly aimless play which enters into them, by the rhythmic beating, hilarious cries and songs, &c. They would not attempt to deny that, whether the dance was to celebrate a victory in war, the capture of an animal in the chase, the stranding of a whale, the coming of the salmon, or the finishing of harvest or vintage, the play-excitement would be fused with a more or less solemn spirit of communal interest. Although bodily play-excitement and communal interest are constant elements of festal celebrations, neither of them may be the moving spirit of the celebrations that travellers observe in any particular instance. Having become traditional habits of the tribe, the celebrations had clinging to them interests which were superior to their originating impulse, interests of patriotic and religious memories, which could only have

developed along with the mental development which resulted in the origin of the human characters of mind. When the ethnologist regards the celebrations, such interests as these are their vivifying spirit. But if we are to interpret the previous course of their development at all, we must follow the psychological consequences of the fusion of the two primitive elements, and see in how far they agree with the state of things familiar to the ethnologist and philologist.

The foundation we have to work on is the animal consciousness as occupied with the diffused pleasure of bodily play-excitement, and the communal elation following success in a common enterprise. This state of consciousness must be preserved in order to do its work. Its natural modes of expression tend to preserve it, *i.e.*, the bodily play-movements in imitation of the successful actions and the rhythmic beating. These movements give to consciousness preservative elements of sensation. But they have to compete with destructive elements connected with life-caring instincts. These latter, for instance, sights or sounds of a terrific character, must often have completely destroyed the play-excitement. But our speculation has no concern at all with the violently destructive elements of perception. They take away our fundamental fact till the conditions occur again for bringing it into existence. It is upon slightly destructive elements of perception that we should direct our attention. It is in face of slightly destructive elements (ordinarily occurring sensations connected with natural passions, life-caring instincts, &c.) that we must ask if there was anything about the production of the preservative elements of sensation which rendered it likely that they would improve in their competing effectiveness. The question being brought to this point, it is hard to say that it would not occur to many psychologists to look to the rhythmic beating for the direction from which the improvement might come, even if they saw nothing in the art of music to guide their speculation. But we are distinctly guided in this direction by the psychological grounds of the development of the art of music. For it is possible to work down from the greatest symphony of Beethoven to the rudest rhythmic beating of savages, and show that every step of tonal development between them was made in order to improve the effectiveness of the elements of sensation which could preserve the content of consciousness springing out of play-excitement and communal elation. Passing over all plausibilities from geology about the period when objects capable of emitting a musical tone began to be struck for

the rhythmic beating of the play-excitement, I have but to point out that, when a musical tone was produced in the persistent succession of rhythmic beating, the elements of sensation which had but an ordinary destructive power would have less opportunity for completing the psychic movements on which their destructive power depended than when the sounds produced in the beating were only noises. By its own natural right the impression of a musical tone has a startling vividness. The attention-drawing power it possessed by natural right was enhanced by the conditions of its production, which ensured repetition in a persistent temporal succession. The persistent succession of such impressions inevitably induced an attitude of sustained expectation in the animal consciousness. And it was the absorption of attention implied in this expectant attitude which shielded the feeling of play-excitement and communal elation from all destructive elements of perception, except those which were linked instinctively with peril or the strongest animal passions. It is needless to say anything about the way in which musical tones must have developed in their attention-absorbing power. The compound nature of the musical tone, and the resulting intimacy of its relation with other tones at the intervals of octave, fifth, &c., speak for themselves. To insist that tonal constructions have always been increasing their absorbing power would be to insist that the art of music has developed. I hasten to call attention to something that was happening both before and after the stimulating rhythmic beating produced tones, I mean the animals' excited cries. In face of the exceedingly stunted supply of vocal tones furnished by the animals which are the nearest physiological allies of man, it may be asked if comparative psychologists who construct a bridge between the lower animals and man do not see a difficulty in the general aspect of "phonetic decay" in the history of speech. How became the original supply of vocal tone so copious as to bear the decay of ages in the sign-bearing growth of consonantal checks? One who assumed or admitted that naturally occurring emotional excitement effected a beginning in the production of such vocal tone would be, apart from the insurmountable speculative difficulty of the event, ignoring the fact that the animal's cry of natural excitement offers about the most melancholy outlook for future development or variety that is offered by any natural phenomenon. The natural passion is always the prison-house of the cry it impels forth, shutting it off from the possibility of furnishing a germ of future

development of any kind. But the fact of the copious supply of vocal tone in the beginning would render it necessary to assume that cries of excitement did not merely break through the walls of their prison-house, but became infused with a mighty spirit of development from somewhere. Taking up the chain of psychological events arising from the conditions of nascent musical pleasure at the point where we reached the animal's cries, let the reader observe that the same excitement which impelled to these cries also impelled to rhythmic beating, and thus produced a persistent auditory model for the cries. The inducement to break the cries from their purely natural character to follow the model of the sounds produced by beating could not help working its way in time without any conscious effort on the part of the animals. But here we reach a point on which the facts bearing upon our problem will hardly ever justify a fixed opinion, namely, whether or not the rhythmic sounds were of musical quality before they induced such vocal imitation as could become effective towards establishing the elements of speech. It will easily be perceived, however, that the point is not of fundamental importance. There was certainly more musical possibility in the vocal apparatus of any likely progenitor of man than in the first rude objects of percussion. If this apparatus were drawn to adapt itself at all to a rhythmic succession of sounds it would produce better musical sounds than its model. All that is necessary here is to indicate how the walls which penned vocal utterance within mere animal habits or passions were broken through. Of course we know as a fact that tones of musical quality and in musical relations were produced in time from objects of percussion, and that the vocal apparatus succeeded in adapting itself to the production of these ; and it is obvious that the activity implied (destined to become the activity of song) would more and more effectually narrow the opening into consciousness for elements of sensation which would be destructive of the pleasurable feeling which is the foundation of our study.

I will now venture to bring our result—namely, the excited cries' being drawn into the mould held forth by tones produced from rhythmic beating, at a time when the animal-consciousness was steeped in the emotions belonging to the actions out of which the play-excitement sprang—into relation with the belief fostered by philological research, that the ultimate roots of language, the "vocal signs," are the signs of concepts of actions, and into relation with the mysterious union existing between music and speech at the earliest

glimpse which ethnology or history obtains of them. What was there favourable for the origin of concepts in the circumstances of this vocal production of tones? If we regard only the superficial aspect of the musical inducement to a persistent repetition of the vocal tones, it is evident that the conditions are laid for the tones' becoming mnemonics of the actions they were associated with in all the members of the community that let the elation of success fuse with, and find an outlet in, bodily play-excitement. If we follow the deeper psychological results of the production of tones, we shall see at work a portion of psychic machinery which avoids all the worst of the difficulties that have hitherto blocked the way to an understanding of the purely natural evolution of concepts with their fixed vocal signs. How a vocal sounding mark should ever become fixed in the consciousness of animals (not yet possessing the specially human characters of mind) to the vague, manifold, presentative elements of a concept, is a problem which may be solved in the light of the psychological conditions of this vocal production of tones. If we sum up the results of the nervous outlets of the excitement (bodily movements, cries, rhythmic beatings), it will be clear that—(1) the movements in imitation of actions, besides tending to keep up the general and diffused sense of the elation of success of the actions, tended also to specify particular actions in consciousness. The sensational and perceptional details of the actions as they were imitated would inevitably bring their peculiar emotional background into consciousness, and so far particularise the play-excitement. The war-dances and phallic-dances of savages demonstrate the truth of this, for they often so fully particularise the actions imitated in play, that the play-excitement dies away in a natural passion. (2) The excited cries' having become rhythmic and tonal along with the rhythmic tones produced from external sounding bodies, besides fixing themselves upon the presentative elements in consciousness, tends also to preserve the stability and integrity of the pleasure clinging to them against any destructive sensations or perceptions. My space is too near its limit to permit me to do more than invite the reader to think a little of the subtlety of this economy: how the sounds which held the animals' attention with their sustained temporal succession and their pitch-relations had by psychological necessity to become, every moment that they did their shielding work, more and more successful reproductive agents for bringing the vague, pleasurable, presentative elements of past actions back to consciousness again, when the animals' life-cares or

brutal instincts had driven them away; how the sounds became able to keep these elements together in the fire of an intensely pleasurable feeling until they had time to fuse into the wonderful phenomenon of a concept.

My conclusion, plainly, can be nothing else but that the psychologist will advance upon the philologist's negative definition of the ultimate roots of human speech. The philologist says that roots are elements of words which analysis can reduce no further. The psychologist may say that the root is not ultimate for him. He can trace it back to the musical tones which became reproductive agents of the vague presentative elements of actions as they had been repeatedly held together in consciousness by the psychological machinery of nascent musical pleasure. He can trace the root back to the rhythmic sounds that savages produce when they beat sonorous bodies amid the play-excitement which was originated through communal elation of the success of communal action, and which had become, at the earliest glimpse we obtain of it, involved, like the oldest and most sacred of the words it gave birth to, in the race's traditional custom of festal celebration.

IV.—INDUCTION AND DEDUCTION.

By L. T. Hobhouse.

In a previous article (Mind, No. 62) I said that I aimed at proving that all reasoning involved generalisation from observed facts, and that such generalisation could be shown to proceed on a definite principle. In the course of the article I tried to make clear what this principle was. The inferences which I took and analysed were mainly cases of what would usually be called inductive generalisation, and it might be urged against me that deductive inference is a wholly different thing. This is the point which I now wish to discuss. Does Deduction involve something quite different from generalisation, or is it the same thing under a different aspect, or a particular species of the same thing? In any case, can it be found to imply any single axiom, and if so, what is the relation of that axiom to the axiom of Induction?

There are two main ways in which Induction and Deduction may be distinguished, and I will deal with them separately. First of all, we may distinguish the assertion of a universal from its application. This distinction is too familiar to need illustration, but we are concerned with the principles involved in it. The point is, Does the assertion of the universal rest on one principle and the application of it on another? I answer—Clearly, no. The general 'All A is B' is meaningless unless it is to be applied to fresh particulars. If not the whole, at any rate an essential part of its logical value is precisely this, that it constitutes a rule for dealing with fresh particulars. Correctly viewed, it is itself the principle on which we go from minor to conclusion. That we assert or apply such general principles at all implies, as we have seen, the axiom of Induction, but no new principle is involved in applying a rule which you have only asserted in order to apply it. The *Dictum de omni et nullo*, nominally the axiom of the Syllogism, is really a definition of what we mean by a principle. It is then no tautology, but may be paraphrased thus: 'When we assert B of A as such, we mean that we shall assert B of any A_1 or A_2'.

To understand this clearly, we have to raise rather a wider question. The application of a universal to a particular case is represented by the Syllogism in which the major is a general judgment and the minor a particular judgment of

perception (I say nothing here of cases where the minor is also general)—the familiar Syllogism which supplies us with information concerning the latter end of Socrates or Mr. Gladstone. Now it may be said: 'The conclusion in this Syllogism is a different judgment from any that we have had in the premisses, and the evolution of one judgment out of another or others is inference. Therefore the Syllogism is inference. Therefore it must proceed on a definite principle of its own.' This leads us to the broad question of the principles of Inference.

Whether the term Inference should or should not be applied to every case of the evolution of one proposition from another is very largely a question of terminology. With that I do not deal, but I wish to distinguish three cases of this evolution with a view to understanding what the axioms of inference are and in what cases they are applied. Broadly then, when I compare two judgments with each other I find that they may be—

1. Tautologous—the same assertion of the same fact.
2. Different statements of the same fact.
3. Assertions of different facts.

Each of these distinctions needs a word of explanation. To begin with, tautology and different assertion of the same fact, or restatement, are not quite the same thing. If I say, 'This A is B, therefore the fact which I denominate A is the fact which I refer to as B,' this is pure tautology and absolutely pointless. The variation in words in no way affects the meaning. If, on the other hand, I gather up two or three propositions into one, 'as A is X, B is X, C is X .·. A, B and C are X,' this is not tautology, for it may not be valueless: but yet it does not state any fact not already stated; nor does it involve any conceivable axiom unless it be the axiom of Contradiction, which is in effect a statement that you mean what you say. Thus I take judgments to be tautologous when they might equally well be put into the same words, and I say that one restates the other when they assert the same fact but could not equally well be put into the same words.

From both of these we may distinguish judgments which assert different facts. A judgment expresses a relation between two terms, and hence two judgments may be said to assert the same fact when they assert the same relation between the same terms. But if either of the terms or the relation differs, then they assert different facts. Thus 'A is B' is one fact, and 'A is C' is another, as long as the attributes B and C are in any way distinguishable as different terms. Further (and we shall see the importance of this later on),

'A and C are both related to B' is one fact, 'A is related to C' is another, and not merely a part of the first, for we take A and C in one relation in the first proposition, and in another in the second. On the other hand, A—B, B—A (the symbol marking any relation of two terms) are precisely the same fact, the order of assertion alone being different.

Now mark the difference in evolving one proposition from another, according as the two do or do not assert the same fact. In the former case, to deny the one is to deny the other; or, what is the same thing, to assert one and deny the other is to deny those general laws of thought which lay down the conditions on which alone judgments have meaning. The judgments are simply convertible: we have A—B, B—A. In the latter case, the two judgments express different facts; hence, however they are connected, to deny one is not to destroy the meaning of the other. It may indeed virtually deny the other, but only on the understanding that some axiom expressing the connexion of facts holds true; and in this way two judgments are not accurately spoken of as the same, because, being connected on some principle and the principle being taken for granted, they are seen to stand and fall together.

I would thus distinguish the cases in which one proposition is drawn from another by a double criterion. On the one side, I have restatement of the same fact, implying only that the first statement has meaning, and implying therefore no general truths but such as are already implied in making an assertion at all. On the other side, I have assertion of a second fact on the basis of a first, implying, beyond the fact asserted in the premiss, some general truth of the connexion of facts. When I say A — B ∴ B — A, I restate the same fact, and imply no general principle but the law of Contradiction. When I say A — B ∴ A — C, I state one fact on the basis of another, and imply some general principle on which I have connected B and C.

Taking the law of Contradiction, then—and possibly other general principles—as implied whenever we make an assertion, and therefore whenever we base one assertion on another, the question that naturally arises with regard to any inference is, What *further* principle, if any, do we invoke? The so-called immediate inferences, like A — B ∴ B — A, we have seen, invoke no further principles, whereas the reasoning that asserts a new fact appeals to some principle of the connexion of fact. As such assertion appears to me the special work of reasoning, I should be inclined to call such principles the principles of Reasoning proper.

Applying this doctrine to the case of Syllogism: the conclusion will be tautologous if it asserts something already asserted in one premiss; it will be a restatement if it asserts a fact already asserted by the two premisses taken together in such a way that the premisses will be meaningless unless the conclusion is true; otherwise, it is a statement of a new fact involving a principle of the connexion of facts. Which of these is it?

Our first answer depends on the meaning given to the major. If 'All A is B' is a mere summing up of the perceptions of all the individual A's, then $A_2 - B_2$ has already been perceived. The conclusion then states what is implied as already known by the assertion of the major, and the whole process is needless tautology. But the major does not merely sum up a number of perceptions. It is not a judgment of perception, but a generalisation based upon perception. It is not a statement of what is or has been perceived, but of what will always be. Hence it does not contain the conclusion as a fact of perception on which it rests, but as a rule for drawing it from the minor.

Thus the conclusion is not tautologous. On the other hand, taking the premisses in combination, we get 'Any A—B,' and 'This A_2'. The conclusion, then, states what is already asserted. There could be no meaning in saying 'Any or All A—B' unless we meant to assert B of A_2. The denial of the conclusion would leave one premiss meaningless. Though the major does not take this A_2 to have been examined, yet it is an assertion by anticipation about this A_2 when identified as A. We have, then, in the premisses the present case ('This') qualified as A, and B asserted of all A's. In this statement both terms of the conclusion are contained. The conclusion, then, does not assert a different fact or postulate any law of the connexion of facts. It is the statement in a single judgment of what the two premisses mean when taken together. It reasserts the same fact which they assert.

Taking both major and minor as given, the conclusion asserts no new fact. But to put these two premisses together, and so draw the conclusion, requires a real, sometimes an important, movement of thought. This movement is often described as the making explicit what is implicit in the premisses. This is correct if we understand 'implicit' in a very precise sense. For, in a way, the conclusion may be said to be implicit in the major alone—*viz.*, on condition that the minor is true. And, in a way, an inductive generalisation is implicit in the experiment that proves it—*viz.*, on condition that the principle of Induction is true. But the con-

clusion of a Syllogism is implicit in the premisses on no further condition at all than that these premisses have meaning. Briefly, Generalisation involves an universal principle connecting different facts: Syllogism does not.

Taking the two premisses for granted, the conclusion involves no general axiom. If, however, we turn our attention to the premisses themselves, we find, of course, that the major rests ultimately on generalisation from particulars. Syllogism then appears as simply the opposite side of generalisation. In the latter we assert a universal for the first time, in the former we apply a universal already asserted. But in both we are dealing with the same relation of universal and particular. In both the particular is regarded as exemplifying an universal. Hence, whether we assert or apply our universal, the same ultimate logical fact, expressed in the axiom of Induction, is at the bottom of the process.

The whole matter is best understood by going back from the major to its evidence, and so taking into one view the whole process from data to conclusion; we have then as evidence the observed relation $A_1 - B_1$; from this datum we may, on the axiom of Induction, conclude either the universal $A - B$, or the particular $A_2 - B_2$. We may draw this particular conclusion without expressing the universal, but, logically, the universal must be true if the particular conclusion is warranted. The one axiom postulated, then, in concluding from our evidence is the axiom of Induction, and, logically, both the particular and the universal conclusion are drawn from that evidence upon that axiom. But psychologically, or in the order of individual knowledge, we may proceed differently. The conclusion $A_2 - B_2$ is particular, and perishes. The conclusion $A - B$, resting on precisely the same ground, is universal, and serves as a rule for further use. Only, when it is applied in the future, no further principle is required than that upon which it was originally asserted. It is upon that axiom that we assert the universal in the first place, and it is upon that axiom that we expect the new particular to behave like the old. The universal has become a rule, and though its application means new movements of thought, it does not make logically new assertions such as imply any fresh principles of the connexion of facts.

Regarded as an advancing movement of thought, then, the process from particular to particular forms one whole, in which a universal truth is asserted and applied on the ground of a particular observation by the implication of a

single axiom. When we ask where the discovery or fresh assertion lies in this process, we may say in the assertion of the universal. But if we ask what is the logic of the whole matter, we do not find this in the assertion any more than in the application of the universal. The logic of the matter is that the particular is a case of the universal; that is to say, that the axiom of Induction applies to these particulars as to others. It makes no difference to this purely logical view whether it is the particular which we first observed that we consider as exemplifying a rule, or whether it is any new particular that turns up. In either case we are bringing a particular under a universal relation, and to state the particular as a case of the universal is to give the logic of the process.

Syllogism, then, as a process of combining two propositions into one, involves no axiom at all; as employing an universal premiss, it presupposes the axiom of Induction and no other.

It is implied in this view that the evidence of the syllogistic conclusion is always the observed particular facts. The major premiss is not evidence at all, but it is as necessary a part of the process as the evidence itself. For if it is not true the conclusion is not warranted. It is itself an inference which we draw from the evidence, and the principle on which we can draw conclusions of a different kind, *viz.*, particular conclusions, from the same evidence.

So far, however, we have confined ourselves to a single type of Syllogism—that which applies a single universal to a new particular case, and accordingly we have distinguished the inductive and deductive parts of the inferences considered as consisting respectively in the assertion and application of the same universal. But a different distinction may be drawn between Induction and Deduction. The whole process of bringing particular facts under universals by observation of similar particulars may be called Induction, while the conbination of several universals in a chain of reasoning is called Deduction. Thus, if I say that free trade is good for a nation on the ground that it has been good for England,—that is an induction. If I say it is good for a nation because it allows a great increase of cheap imports, and increased imports again must be paid for, and therefore exports must be increased, and therefore manufactures are stimulated,—that is a deduction. Symbolising, we get in the two cases—

(1) $A_1 - B_1 \therefore A - B$ or $A_2 - B_2$.

(2) $A - B - C - D \therefore A - D$.

Now it may be asked what is the connexion between

these two types of reasoning. In the first, which I will call Generalisation, we assert an universal on the ground of a particular, or a particular on the ground of a similar particular. In the second, which may be called Construction, we assert a relation between two universals on the ground of the relation of each to one or more intermediate universals. In the first case, we generalise a single relation; in the second, out of several relations, all general, we construct a resultant relation, or, if you like, construct a whole in which the resultant relation appears as part. At first sight there seems no point of contact between these two processes.

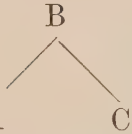
I am the more concerned to find out some connexion between them because I am convinced that both processes are genuine processes of Reasoning. There has, I think, been a tendency among different writers to slur over the one or the other. But you cannot, out of the mere assertion of several universals, get the connexion of them all into a whole. Still less can you connect universals unless you have first got your universals to connect. It is one thing to say A – B – C – D ∴ A – D, but it is another thing to know that the several links A – B, B – C, and so on, are all universal relations. In the instance quoted, I must know that free trade will really lead to increased imports, that increased imports must be paid for, and so on. It may be said that these propositions are obvious, but I should like to know how they would be obvious if they did not represent the results of daily observation; unless indeed they are regarded as deductions from more general truths of commercial human nature, which only leads me to repeat my question—How are these ultimate generalisations known?

Construction then involves generalisation at every step. A – D is a resultant relation obtained by putting A – B, B – C, C – D together, but A – B and B – C must each of them be generalised from observation. The question then is not whether construction is the only form of reasoning, the *unum necessarium*, but what kind of principle the assertion of the resultant relation (or the constructed whole) involves when we take the component relations as given.

I expressed above my belief that all reasoning involves generalisation from observed cases. Now I admit that construction, as I have defined it, is a true reasoning process. In what way then does it involve generalisation?

This question has generally been answered by the invention of a major premiss, cut out, so to say, to suit the occasion. In many instances this may be a sufficient answer. That a given combination gives a certain resultant

may be a fact generalised from experiment like any other. But that this simple answer in this form is adequate, Mr. Bradley has sufficiently disproved. Taking the inference which he uses (*Logic*, p. 226), 'A to right of B, B to right of C, ∴ A to right of C,' and comparing it with the major premiss which he suggests for it on the following page, any candid person would make the confession which is demanded of him, and would allow that though he has made the inference often enough he has never seen this premiss before. Of these simple constructions we certainly do not make any explicit or conscious generalisations. But that leaves us with the question, How then do we know them? Given the A – B – C, how do I know A – C? How do I know the resultant relation formed by two relations? In the first place, A – C is not precisely the same fact as A – B, B – C. It is not an independent fact, nor wholly separate from them, but it is not the same fact reasserted. If I take A, B, C to represent three points in space so arranged that I cannot see all of them together, I may know A – B and B – C, and may put them together as A – B – C, but yet not form a conception of the resultant relation A – C. I may travel mentally from A to B and from B to C without drawing the base line A – C. Conversely, I may know A – C without knowing A – B and B – C. In fact, as above remarked, the judgment A – C deals with terms already contained in the judgment 'A and C are related to B,' but asserts a relation not asserted in that judgment. The relation of A and C to B is not their relation to each other. Doubtless, one judgment *virtually* asserts the other, but only, I think, on the understanding that some general axiom of the resultants of relations holds good. Secondly, I do not see how I could put A – B, B – C together and know what the resultant A – C would be *if I had never seen such a construction before*. Putting the terms in the adjoining form,



I *see* A – C to be the relation that results when we have A – B, B – C as they are there given. If now I am told that there are three other points in the next room, or in the moon, if you please, and of these $A_1 - B_1$ is a relation like A – B, and $B_1 - C_1$ like B – C, I can at once construct the resulting $A_1 - C_1$. But how? By generalisation from the instance once observed.

I see no evidence that a construction could be carried out accurately by the mind unless a similar construction had been observed. Of course a construction may be compounded of elements, each of which is itself constructed of

simpler ones, and we may have never observed the whole compound before. In this case we must be acquainted with the method of constructing each element singly, and then with that of combining all the resultants together. But we cannot, I believe, construct where we have no instance from which to generalise. To take a different case: I do not believe that I should know that two and two are four if I had never added them up, just as I do not know what 756432 + 91864 make because I have never added them up, and the addition is, I believe, at bottom a construction of constructions presented originally to sense.

But I will go back to our geographical example. I do not believe that I should know that A to right of B and B to right of C gave A to right of C, had I not some instance of points so related in my mind. I do not know the relation of A to C if I am given a very complicated system of links by which to connect them, unless I can assimilate the system to one which I do know already. And in the same way, even with a system of relations I know well, if I wish to get a clear idea of them in my head, I draw a plan and generalise from the plan to the relations which I do not see.

It will be answered: 'You may not know that A — B — C gives A — C, but once shown to you, you see it must be so'. If the word 'must' means what I take it to mean, this is precisely my point. As soon as we see the resultant we take it as a general truth, or we see that nothing external to the system of relations considered can make any difference to the resultant. The work of generalisation, performed in instances ordinarily called inductive by laborious elimination of concomitants that may possibly have influenced our fact, is here put aside by the nature of the assertion made. Accordingly we do not consciously generalise such observations at all. If ever we do, our generalisation sounds superfluous and unmeaning, because all along we have no doubt of the single instance being typical.

The nature of the generalisation made in these cases may be shown most clearly by putting down an axiom on which a great mass of them may be taken to proceed. I do not suggest that it is the universal axiom of Deduction, but it is typical of a class of Deductive Axioms. I will write it thus:—

If, where two terms are in any way related to a third, a relation between the two is observed, then when any other two terms are similarly related to any third, the relation between these two will be similar to that observed between the first two.

This axiom, it will be observed, like the axiom of Induc-

tion, is a principle of generalisation. It states that what holds in one case will hold in another. If, then, our constructions are really formed by generalisation from observed constructions, it will be true that deductive reasoning is generalised observation as well as inductive. The difference will be in the nature of the generalisation and of the observation. In Induction we observe a simple relation, as A—B, and we have then, by repeated observations or observation of concomitant facts, to show that no external C has influenced this relation. We then assert this simple relation universally. Thus the work is only begun when we first observe what we afterwards generalise, and this first observation is not the difficulty. Just the opposite holds of the generalisations of Deduction. Here the difficulty is with the observation. We have first to put a complex system of facts together, and then observe their resultant. That being done, we generalise at once on the principle just laid down.

To understand thoroughly the nature of this axiom of Construction, we must bear in mind the conditions under which alone we can speak intelligibly of one relation as a resultant of two others. If my terms A, B, and C denote concrete subjects, each capable of being viewed in many relations, or rather in relations of many types, and if the relation A – B is of one type, and B – C of another, I do not necessarily get any 'resultant' relation A – C at all. It must be understood, then, that A, B, and C are what I will call *simple or single points of relationship*. Of such a conception the spatial point gives a very clear example. The spatial point A is a centre of an indefinite number of relations, but they are all relations of one kind—space-relations. If A be a physical particle, it may be a single thing, yet it is related to other things not only spatially, but in many other ways. Each of the different kinds of relation into which the thing may enter implies a different aspect or attribute of the thing. And each of these aspects or attributes is the basis of many relations. Thus in the concrete thing we get a double complexity. It possesses many attributes, in virtue of each of which it stands in a wholly different kind of relation to other things. And each attribute involves it in many relations of the same kind. There may or may not be forms of construction involving relations of different types, but we need not concern ourselves with them here. The simplest construction on which others rest is that of two relations of the same type, and the axiom which I have suggested applies to relations so understood.

This obviates the criticism perhaps justly passed on Mr.

Spencer's axiom of the Syllogism—" Things that are related to the same thing are related to one another". This statement may be too wide unless thing and relation are defined in some way. But I would point out a more fundamental difference. Mr. Spencer's axiom does not tell us enough. It says, in effect, if A and B are both related to C they will be related to each other. But it does not say *how* they will be related to each other. It does not give us any idea whatever of the kind of relation between them—not even whether it is a relation homogeneous with A — B and B — C. It merely says there will be a relation between them. Now in the axiom suggested above we know the relation precisely, because we assimilate it to an observed case.

I have thus suggested two axioms as implied in generalisation. These I believe to be types of the axioms which are postulated by Reasoning. I do not mean that generalisation is the only aspect under which the work of Reason can be viewed. In the present article I have given full weight at any rate to the constructive or synthetic character. But I do say this, that the peculiarity in reasoning, by which it is distinguished from judgment and all other intellectual operations, is that in it we proceed from a fact that is or has been present to the mind to another fact that may never have been present to the mind at all. This process is that of generalisation, and if reasoning is something that proceeds on any definite principle at all, there must be some axioms which lay down the conditions under which facts not presented may be known to exist. This is what the axioms of Reasoning have to do, and they are thus distinguished from those principles which have been called the 'Laws of Thought'. These last express conditions which any assertion must fulfil in order to be an assertion of fact at all, but do not give us any ground for asserting any one fact in preference to any other. The axioms of Reasoning are not implied by assertion as such, but when a first assertion is made do give ground for asserting some other fact in consequence. They are essentially general principles upon which, given one fact, you can state another.

It remains to ask whether there is any relation between these two axioms. It will be noticed that both are principles of generalisation, but that, while one holds only of relations between terms of which other relations are already given, the other holds of any related terms whatever. This would suggest that the Constructive Axiom is really a case of the Inductive, and on the whole I believe it to be so. It is, I think, a case of the Inductive Axiom in which any possi-

bility of the interference of an agent outside the terms considered is put aside by the nature of the terms themselves.

According to the axiom of Induction, the relation A — C will be constant unless there is a change in the facts conditioning A or C. The converse of this is that, given all the conditions of A and C unaltered, the relation A — C will be unaltered: in other words, the relation A -- C is conditioned only by those facts which condition A and C themselves. But in the case where we can apply the axiom of Construction the conditions of A and C are given as unaltered. A and C are (in our example) the mere abstraction of points at a certain distance from B. Between points so determined we observe a relation, A — C. Now we say, given other points similarly conditioned, the relation between them will be similar. This is simply to apply our old axiom of Induction in a case where the conditions are given. Our new axiom then is the old one *plus* a postulate. The old axiom states that the relation will hold unless the conditions vary; the new one postulates that the conditions do not vary. Hence to use the first axiom we have to find out by observation what the conditions are. We apply the second to a case where the conditions are laid down by definition, and where it is taken as given that they remain unaltered. Nor is the axiom of Construction the only one that can be formed in this way. Whatever the conditions of a relation may be, so long as we postulate that they are unaltered we can assert that the relation will hold. This will give us axioms differing in statement and in application as the conditions postulated differ, but all constructed on the same principle, all applications of the general axiom of Induction to cases where the conditions are wholly or partially given as similar to those found in the case observed.

The generalisations which we form by the help of these axioms are not as a rule explicitly stated as generalisations. We do not write them down as majors. None the less they are logically the true principles of our constructions. We do not state them in the abstract and then consciously apply them to form a particular construction, yet the construction would not be warranted if the principle were untrue. Each construction, in other words, is made on its own proper principle, though it may not be explicitly referred to that principle.

From this point of view the logical justification of any construction is that it is the conclusion of a syllogism, it is formed by the application of a general principle to a particular case. That this is so is obvious where the law of a con-

struction is obtained by, say, physical experiment. That A + B = C may be a generalisation from a series of observations, just like any other law; and the inference to this case of A + B is an obvious instance of the application of a law to a particular case. It is equally so when the law of construction is formed on one of the axioms which we have been considering from the observation of a single instance. In this case the work of generalisation is too easy and obvious to need expression, and the law if you write it down is a platitude; it does not enter into the conscious process. Nevertheless it is the logical justification of that process which thus ultimately rests on the Inductive Axiom in some shape or other. The process that occupies attention is that of putting elements together into a whole, yet this is in fact carried on upon principles that are tacitly assumed, but which must be logically justified as generalisations from evidence if the process that implies them is to be held valid. A construction then is always a conclusion from a major, resting either on the ordinary methods of induction or on a special application of the Inductive Axiom. Hence, generically, Deduction is the application of the general to the particular, and of this the process of Construction is a special case.

Hence we have seen that the principles of Induction are essentially those of all inference whatever. The basis of reasoning is always one or more observed particular facts. The result of reasoning is always the assertion of some fact, not stated in the premisses, as being true if the premisses are true. This result is due to generalisation, which is always involved in reasoning, and which ultimately rests on a single principle, which we have called the Axiom of Induction. The generalisation may be merely implied as the principle upon which we infer from one particular to another, or it may be explicitly stated in abstract terms. In either case it is logically essential. In the latter case we may distinguish the act of asserting it from that of applying it, and call the first Induction and the second Deduction. They may, in fact, form separate actions of the mind. But they involve one and the same principle. We may, further, distinguish inferences according to the general nature of the premisses and conclusion, in accordance with which the stress of difficulty changes. Where we wish to establish a relation as universal without any conditions, the main difficulty is in the assertion of the general which is to be accomplished by acuteness of observation. Where we wish to combine elements into a whole, the main difficulty, as a rule, is to assure

ourselves of our elements and their several relations. The construction that we form does indeed assume a generalisation, but, as a rule, one which nobody would contest. Hence the process of combining the given elements occupies the whole attention, and gets the name of Deduction, but logically it implies an inductive basis.

Ultimately, then, in both cases alike the conclusion involves generalisation from an observed case on a single axiom. It is this generalisation which distinguishes reasoning from other intellectual processes, and the various forms of the axiom of Induction are therefore the axioms of Reasoning. As to their basis I make no inquiry at present. But it is clear that they are not generalisations from evidence, for they are themselves implied in generalisation. Nor yet deductions from higher principles, for they are implied in deduction. Nor, again, are they 'assumptions' made by an 'act of scientific faith,' for assumption and faith are of things wholly or in part beyond reason, and may be to some extent unwarranted; but these principles are involved in all Reasoning, and are therefore as clearly warranted as the most clearly reasoned belief. They are principles the application of which is the operation of reason, and apart from which no inference is logically justified. Finally, if we thus conceive the generalisation of particulars as the work of reason, we get a clearer conception of general truths. They are not mere colligations, stating what is or has always been observed. On the other hand, they do not state anything but what is observable. The terms connected in the universal judgment are terms that may be observed by sense or in some way presented to the mind. The relation between them is equally an observable relation. The general judgment states simply this, that terms like certain observed terms will always be found in relation to one another like the relation observed between the terms observed. We thus get universal judgments which neither deal with things apart from observation nor yet are mere summings-up of what has been, but are assertions in the spirit of an imperative of what will always be presented to the mind—assertions which result from the observation of particular facts upon definite and consistent principles.

V.—DISCUSSION.

DR. MÜNSTERBERG AND EXPERIMENTAL PSYCHOLOGY.

By E. B. Titchener.

The readers of Mind have been already made so far familiar with the contents of Dr. Münsterberg's *Beiträge zur experimentellen Psychologie*, that any general introduction to the present criticism is unnecessary.[1] It may suffice to recall the fact that the author's aim is threefold: the combating of an existing psychological theory; the establishing of a new psychophysical theory of his own in its place; and the testing of this latter by crucial experimentation.[2] From a scientific worker, attempting so difficult a task in the face of received opinion, one may reasonably require the use of scientific method; one expects to find the 'orthodox' view correctly understood and represented, the theory, which is to take its place, coherent and adequate, and the experiments, on which the new doctrine rests, exact and searching. I shall endeavour to show, so far as space allows, that Dr. Münsterberg's work leaves very much to be desired in all three respects.

Dr. Münsterberg's plan is to preface each separate research with a critical discussion of past work, and an exposition of his own theory; so that the reader comes to the experimental part with more or less of prepossession in favour of the explanation already given, and, perhaps, with the edge of his critical acumen more or less blunted. I propose here to follow the inverse method; and to ask, first of all, what sort of basis these experiments would make for the support of any theory whatsoever; recurring later on to their particular application, and to the author's polemic against Wundt.

I. Ludwig Lange, working in Wundt's Institute in 1886-7, discovered that the time of reaction to sense-impression differed considerably, according as the reagent concentrated his attention upon the stimulus or upon the reaction-movement. With sound-stimulus, *e.g.*, the "muscular" or "shortened" reaction-time would be 125 σ; the "sensorial," 225 σ.[3] Lange concluded, as regards the former, that the reaction is an involuntary, indeed reflex, movement; including neither apperception of the sense-impression, nor act of will, though occurring under the influence

[1] See the Editor's two articles: Mind, xv. 234 ff., 524 ff.

[2] *Beiträge*, i. p. viii.

[3] L. Lange, "Neue Experimente ueber den Vorgang der einfachen Reaction auf Sinneseindrücke," *Phil. Studien*, iv. pp. 492, 493.

of the previous impulse of will, which innervated it. Wundt also explains the process as a brain-reflex; and, accordingly, denies it all value in the investigation of the more complicated psychical processes.[1] It is this latter proposition which Dr. Münsterberg disputes. He seeks to prove that the shortened reaction can occur where such higher processes are concerned, and where there can be no question of the effect of habit; so that the "more complicated choice-movements are also simply brain-reflexes".[2] On this basis he proceeds to experiment.

The more obvious procedure would surely be the raising of the previous question. If the muscular reaction is applicable in cases where we are dealing with the time-measurement of acts of choice, &c., is it a brain-reflex? Dr. Martius, who has carefully investigated this latter point (without regard to the 'if'), gives a negative answer.[3] And Dr. Münsterberg appears to be unable to reply to his criticism; which must be met, unless the whole hypothesis is to fall to the ground.[4]

The general method of experimentation in this research has been described by the Editor in his first article.[5] It is hardly so exact as it should have been, considering the author's polemical purpose. Thus, Dr. Münsterberg maintains that he was able, as experimenter, to call out the stimulus-word, and close an electric key, "with exact simultaneity".[6] This can, of course, only have happened by chance. What the error would be one cannot say; but it must have influenced the results, and it need not have been constant.[7] Still more glaring is the inexactitude when Dr. Münsterberg speaks as reagent.[8] On p. 73 we are first told that there was no perceptible difference in the reaction-times of the different fingers; and, in the next paragraph, that the difference disappeared "with some practice". What were the differences? And how many experiments constituted practice? Movements of two fingers for one often occurred; but the results so obtained were turned to account by the application of an exceedingly doubtful criterion.

Even if the above-mentioned time-error were constant,[9] Dr. Münsterberg's figures could not claim much credit. The proportion of error in one part of the work done with Dr. Thumb amounted to 30 per cent.; in another to 25 per cent.[10] It would be in any case dangerous to build conclusions upon such a founda-

[1] *Physiolog. Psychologie*, ii. 266, 269 (3te Aufl.). [2] *Beiträge*, i. 72.

[3] Martius, "Ueber die musculäre Reaction u. die Aufmerksamkeit," *Phil. Studien*, vi. 190 ff.

[4] Münsterberg, in the *Allg. Zeitschr. für Psychiatrie u. psychisch-gerichtliche Medicin*, xlvii. pt. 6, p. 22.

[5] MIND, xv. 238. [6] i. 69.

[7] See tables in Külpe, "Ueber die Gleichzeitigkeit u. Ungleichzeitigkeit von Bewegungen" (i.), *Phil. Studien*, vi. 514 ff.

[8] i. 89. [9] As Dr. Martius assumes, *loc. cit.*, p. 137. [10] i. 83, 85.

tion; but it is especially venturesome in the present instance: for, in the whole research, Dr. Münsterberg did not himself once react![1] And why is there no hint of a calculation of the "probable" percentage of error, which would enable the reader to control the numbers given?

In the second part of this research we meet with a fatal weakness as early as p. 96. A sentence is called out to the reagent, who replies by association. Where, in the course of the stimulus, does the association begin? Dr. Münsterberg quite gratuitously assumes that it does so at the end of the sentence. But it is plain that all sorts of influences, favourable or inhibitory, may be at work before the final direction is given to the reaction. In fact, it is this possibility alone (unless unusual faults in the apparatus are to be supposed) which renders certain results—*e.g.*, the round 900 σ for the colour-reaction on p. 101—at all intelligible.

We are, then, forced to the conclusion that the experimentation is too inexact and incomplete (in the first research 800 experiments served for 7 groups, each with 5 categories; in the second 800 for 10 groups)[2] to stand as the basis for a theory. On this ground alone, therefore, it would be impossible to regard Dr. Münsterberg's hypothesis as in any sense verified; even had not Dr. Martius obtained quite different results with the same method.[3] But, apart from this, another explanation of the figures lies to hand; and is, indeed, partly indicated by the author himself.[4] In spite of assertions to the contrary, we plainly are dealing here with "automatic co-ordinations"; the large number of errors being explicable by the imperfection of the previous practice.[5] We are thus enabled to explain the large figures obtained with false reactions (p. 77); the figures and error-percentage in the fourth group of experiments with Dr. Thumb (p. 82); and the "surprisingly small" figures in the fourth group of the second half of the research (p. 97). Some difficulties, no doubt, remain: but then the author does not even inform us, *e.g.*, if he makes use

[1] i 69; cp. 117. [2] i. 86, 105.

[3] *Loc. cit.*, pp. 167 ff. Dr. Münsterberg's reply consists of two statements and an analogy (*Zeitschr. f. Psychiatrie, loc. cit.*): (1) individual differences exist; (2) one positive case is worth ten negative ones; (3) colour-blindness does not tell against a colour-theory.

[4] i. 76, 81, 83, 84, 85.

[5] The figures, as they stand, Dr. Martius frankly gives up. He suggests *Einübung*, as explaining a good deal; but emphasises the fact that the report of the experiments is too inexact to allow them to be properly controlled. The times of the experimentation, the control-times, and the mean variations are either not at all, or but incompletely, given. (*Loc. cit.*; pp. 177-8. Cp. J. Sully in the *Academy* of Aug. 16, 1890, p. 135. Mr. Sully makes the "preliminary mental concentration" too complete. For the author's denials, see i. 67, 71, 72.)

of false reactions in estimating mean times, or excludes them in Wundt's way.[1]

II. Although the method of experimentation in the research upon Time-sense (*Beitr.* ii.) is in essential that proposed by Wundt,[2] Dr. Münsterberg has contrived to introduce here also a sufficiency of sources of error. The modifications described are not very reassuring;[3] and the author appears to have forgotten that a hammer takes some time to fall. In any case, where are the figures? What was the total number of experiments made? How great was the constant error? What were the variations? How is the over-estimation of larger times and the under-estimation of smaller, or the fact of periodicity, to be explained? Until these questions are answered, it is impossible to control the research; and the answers in the text are hopelessly incomplete.[4]

Dr. Münsterberg's theory, which the Editor has made clear for him in MIND,[5] is by no means so clear in the *Beiträge*. We are expressly told, *e.g.*, that the direction of the attention upon a period of time is nothing more than the consciousness of our sensations of strain, and of the alterations in their intensity, during that period. Yet the attention is focussed upon these sensations of strain in order that we may measure the time.[6] Worse than this, the act of attention is itself explained by means of muscular sensations: so that we somehow manage to concentrate a sensation of strain upon another sensation of strain. Or, to speak more accurately, the condition of the psychophysical organism at the moment is that of one sensation of strain directed upon another! The idea of Time arises from the synthesis of sensations of strain, and the sensations occasioned by the stimuli which limit time-periods;[7] so that a "pause," in which there is no such sensation, is "timeless".[8] And the time-sense having been reduced to terms of strain-sensation,[9] Time finally disappears altogether; while the fact that our judgment of periods is more precise when the limiting stimuli affect the ear than when they act upon the eye is explained by the help of the hypothesis that the excitation encounters less resistance in travelling on the "reflex path between ear and muscle".[10] But light-impressions have a prolonged after-effect; which is absent in the case of sound-stimuli.

When we are thus getting well rid of the time-element in the time-sense, it is a little puzzling to find the state of respiration and of strain spoken of as the subjective *condition* of comparison of time-intervals—as being of *influence* upon our estimation of time.[11] Indeed, while recognising the service which Dr. Münsterberg has done in calling attention to this influence (to which he should, perhaps, have added that of heart-movement and pulse),

[1] i. p. 35. [2] *Phys. Psych.* ii. 357. [3] ii. 61. [4] Pp. 63, 65, 66.
[5] xv. 529 ff. [6] P. 25; cp. pp. 20, 26, 67; and cf. p. 23 with p. 37.
[7] Pp. 25, 29. [8] P. 38. [9] P. 45. [10] P. 49. [11] Pp. 44, 66.

the reader cannot but wish that he had taken trouble to express his general view a little more clearly. And in any attempt to explain the experimental results it must be borne in mind that the author alone reacted throughout the investigation.[1]

III. In the description of the experiments made upon "Fluctuations of Attention" a similar carelessness of expression occurs. The stimulus employed—a grey ring on a white ground—corresponded to the threshold of difference.[2] Nevertheless, Dr. Münsterberg speaks of the "different maxima of intensity," and of the "varying intensities of sensation"—by which he means its presence or absence.[3] Because the appearance and disappearance of the ring was accompanied by the feeling of weak movements in the eye, it is assumed that such movements actually took place.[4] The group of experiments in which the reagent held in his left hand a pair of prismatic spectacles, which he brought at intervals before the eyes, seem to be of doubtful value.[5] The author writes that all went well "with a little practice"; but one would like to know if the strong tendency to head-movement was observed and checked. The remarks dealing with indirect vision[6] should never have been written; and would not have been had Dr. Münsterberg taken the trouble to experiment with a white stimulus on a dark ground. The phenomenon in this case is, in reality, precisely similar to that observed with the grey ring. This latter, again, is in no sense of the word a "minimal" light-stimulus.[7]

The fluctuations are referred to the varying conditions of fixation and accommodation. Why was not this hypothesis experimentally investigated? If no phacoscope was at hand, the simple plan could have been followed of throwing a double-image upon the rotating disc, and observing whether the distance between its two parts varied with the fluctuations of the grey ring. But the incorrect assumption is preferred. And what physiological ground is there for supposing that the exhaustion of the muscles acts as a reflex stimulus upon fixation and accommodation? The theory is arbitrary to the last degree.[8]

IV. An error common to all published investigations upon Eye-

[1] P. 63.—The strange confusion about inspiration and expiration, on p. 36, may be noticed here.

[2] "Der Ring, . . . bei gespannter Aufmerksamkeit noch gerade eben merkbar"; and "den eben noch merklichen Ring," ii. 85; cp. 100.

[3] Pp. 84, 85. [4] P. 86. [5] P. 87. [6] P. 100. [7] P. 109.

[8] Dr. O. Külpe has pointed out to me that Dr. Münsterberg's theory shows ignorance of the fact that sensibility to difference is finer when the eye is moved than when it is at rest (cp. *e.g.*, Helmholtz, *Phys. Optik*, 315). The value of the just perceptible difference being different for the two cases, we can explain the absence of fluctuation in the former; for the ring which for the resting eye is just perceptibly different from its background would, if the eye were moved, more than just perceptibly differ from it.

measure is that of disregarding the *place* of that portion of the retina upon which the spaces compared fall. In this respect Dr. Münsterberg is no better and no worse than his predecessors. A curious mistake is made on p. 155, where the province of the method of minimal changes is suddenly and unaccountably limited.[1] For the rest, the subject is an easy one; no new theory is propounded; and the path of research has been pretty effectually smoothed by Volkmann and his successors.

V. The next subject dealt with is the Space-sense of the Ear; a part of Dr. Münsterberg's work which Mr. Sully describes as "especially valuable".[2] The author's theory is that the localisation of a sound consists in the assigning to the sensation of the reflex movement which is necessary to turn the head to the source of sound its proper place in the whole system of sensations of head-movement.[3] His experimental method is as follows. Round a common centre (the middle point of a line joining the two tympanic membranes) three circles of two metres' diameter were drawn, whose planes intersected one another at right angles. The difference-threshold for localisation was then determined at various points upon each circumference. The stimulus was the noise obtained by turning the button of a keyless watch. A detailed description of the apparatus is withheld.[4]

The threshold was determined at sixteen points on the circumference of the horizontal circle; but as the data obtained from the right and left semicircles gave "almost exactly symmetrical" results, only nine sets of figures are tabulated. A fairly constant progression was found, from 1·5 cm. at 0° before the face, to 10 cm. at 180° behind the head. The figures obtained from the frontal circle, whose 0° point lay above the head, are about 2 cm. for 90° and 270°; about 3 cm. for 0° and 180°; between 6 and 8 cm. for 45°, 135°, 225°, and 315°. The 0° point of the sagittal circle coincides with that of the frontal. The degrees follow the clock, as the observer stands facing the right side of the reagent. The threshold was found to be 1 to 2 cm. at 0°, 135°, 270°; rather larger at 45° and 180°; 4·5 to 5 cm. at 90° and 225°; 17 to 18 cm. at 315°.[5]

Dr. Münsterberg's theory of Localisation is, as he himself admits, very different from those of most physiologists and psychologists.[6] But the exactness of his results (the largest threshold extending to only about one thirty-fifth of the whole circumference) is so surprising that one is at first sight tempted to

[1] See Wundt, *Phys. Psych.* i. 350, 351. Cp. G. E. Müller in *Göttingische gelehrte Anzeigen*, 1891, No. 11, p. 419. I content myself with this single reference to Prof. Müller's annihilating criticism of the *Beiträge*. The present article was written before the June number of the *Anzeigen* appeared; and the two reviews to a large extent cover the same ground.

[2] *Academy, loc. cit.*, p. 136. [3] Pp. 197, 215. [4] Pp. 217-9.

[5] Pp. 220, 226, 229. [6] P. 183.

take his explanation of them on trust. He has, however, overlooked the significance of the fact that the circles cut one another at various places. If we tabulate the results thus comparatively, we obtain the following equations (in which H stands for the horizontal, S for the sagittal, and F for the frontal circle; and the degrees are reckoned according to the author's directions, pp. 219, 225, 228):—

0°, 1·5 cm. H = 90°, 4·5 to 5 cm. S.
180°, 10 cm. H = 270°, 1 cm. S.
270° or 90°, 7·5 cm. H = 90° or 270°, 2 to 2·5 cm. F.
0°, 3 cm. F = 0°, 1·5 cm. S.
180°, 2·5 to 3 cm. S = 180°, 3·5 cm. F.

The large differences in the first three lines of this table can hardly be explained by variations in sensations of strain; for the sensation of strain would be practically the same for each side of each equation. And the occurrence of the large threshold, 17 to 18 cm., at 315° of the sagittal circle (between 270° = 1 cm., and 360° = 1·5 to 2 cm.) Dr. Münsterberg does not attempt to account for: he merely remarks that it is "striking".[1]

Once more, therefore, facts and interpretation cannot be accepted as they stand. "One cannot resist the opinion," as Dr. Münsterberg himself is wont to say, that the reagents in this research judged simply according to the *intensity* of the stimulus; and that this process was regarded as a direct judgment of locality.[2] Such a theory would serve to explain the irregularities

[1] P. 230.

[2] Dr. Münsterberg has left the careful experimentation of Docq (*Mémoires couronnés par l'Académie de Bruxelles*, xxxiv. 1870, "Recherches physico-physiologiques sur la fonction collective des deux organes de l'appareil auditif") altogether unnoticed. Comparing Docq's curve (p. 22) with Dr. Münsterberg's (horizontal) results—so far as is possible, where the methods employed are so different—I can only find agreement between them at 180°, doubtfully at 45°, and vaguely between 105° and 165°. On the front semicircle the discrepancies are very large. Docq expressly refers judgment of direction to inference from the intensity of the sound; see p. 29: "Si les impressions reçues par les deux oreilles sont inégales, le corps sonore est du côté de l'organe le plus vivement impressioné . . . Si les sensations éprouvées simultanément par les deux organes sont égales entre elles, le corps sonore est sur le prolongement du plan médian de la tête." The intensity-theory is also to be found, *e.g.*, in Ladd, *Elements of Physiological Psychology*, p. 404; Bain, *Senses and Intellect* (3rd ed.), pp. 204-5; Spencer, *Principles of Psychology*, ii. 182; cp. Wundt, *Physiologische Psychologie*, ii. 81-2. Another theory lays stress on the arrangement of the semicircular canals; see Hermann's *Handbuch der Physiologie*, iii. 2, p. 136. According to Dr. Münsterberg, the head-movement is a reflex answer to stimulation of the canals (p. 201). J. Breuer, criticising Preyer's article "Die Wahrnehmung der Schallrichtung mittelst der Bogengänge" (*Pflüger's Archiv*, xl. 596), proves the untenability of this theory. "Wenn . . . die Schallwellen immer in derselben Richtung auf die Endolymphe über-

in the figures; and accords very well with the results of the one-ear experiments, which are appended to those already noticed, and which are not explicable in Dr. Münsterberg's terminology.[1] "Striking" anomalies are probably to be partially referred to variations in the strength of the stimulus. Finally, even if all Dr. Münsterberg's figures and theory were accepted, it would remain to be seen whether the curve of minimal thresholds, which he has not attempted to construct, could be explained upon a basis of sensations of head-movement.

VI. In pt. iii. of the *Beiträge*, Dr. Münsterberg develops the theory that our estimation of the intensity of sensations depends wholly upon sensations of strain; and concludes from this that disparate sensations can be quantitatively compared.[2] He gives a number of experiments, which were instituted to this end, and which profess to confirm the hypothesis. As, however, he does not claim for the figures obtained any absolute value,[3] it is unnecessary to enter into details as regards the method employed.

The first set of experiments consisted in the comparison of

tragen werden, wie sollen sie dann je nach ihrer Ursprungsrichtung die drei Canäle verschieden afficiren?" (*Pflüger's Archiv*, xlviii. 298; "Ueber die Function der Otolithenapparate"). Cp. p. 302, note: "Dr. Münsterberg . . . versucht so wenig wie Prof. Preyer die physikalischen Vorbedingungen begreiflich zu machen". And see von Kries, "Ueber das Erkennen der Schallrichtung" (*Zeitschr. für Psych., &c.*, i., especially pp. 248 ff.).—Early in June, Prof. H. Ambronn and Dr. Külpe kindly put themselves at my disposal for carrying out control-experiments on this subject. Dr. Münsterberg's directions for the horizontal circle were followed throughout. Prof. Ambronn, who is completely deaf in the left ear, reacted without any previous knowledge of the method of procedure. The results of the experimentation in his case may be summed up as follows: (1) Before and behind were confused. This very common experience is totally inexplicable by the theory of sensations of movement. (2) The sound was often localised in a wrong plane. The noise from the watch at 160°, *e.g.*, was referred to the zenith; that from 345° was placed high up, above 15°. (3) The thresholds were very much larger than those of the table on p. 231. (4) The judgment of direction was unhesitatingly referred to the strength or weakness of the sensation. (5) The results were frequently quite irregular.—Dr. Külpe and myself, whose hearing is normal, found the same to hold of us. (1) and (2) were especially pronounced in my own case. We obtained no threshold lower than 10 cm., and this very uncertainly, the direction in which the sound was travelling being often mistaken. About (4) we were not so clear as Prof. Ambronn; our judgment appearing in many cases to be quite immediate. This is, however, readily intelligible. In connexion with (5), we more than once noticed variation in the objective strength of the stimulus. It would, therefore, seem that Dr. Münsterberg's was a *wissentliches Verfahren* in the fullest sense; plane and direction being known.

[1] For, on his theory, the (horizontal) threshold at 90° should have been greater than that at 180°; whereas the numbers are – 35, +32 and – 38, + 31;—*i.e.*, average 32·5 cm. and 34·5 cm. respectively: p. 231.

[2] iii. 57. [3] P. 61.

light-, weight-, and sound-stimuli with movements of the arm; a constant and a variable stimulus being in each case correlated with a constant and a variable arm-movement. Increase of stimulus was found in every case to be attended by increased arm-movement.[1] Secondly, light-, weight-, and sound-pairs are compared, in the same way and to a similar result, with space-magnitudes (*Punktdistanzen*).[2] Then the light-, weight-, and sound-pairs, which have been equalised by eye-measurement, are comparatively tabulated; and afterwards directly compared with one another by experiment.[3] The calculated results are here in every instance smaller than the experimental; but the general outcome is the same. Finally, two tables give the issue of experiments in which the pairs of sensations compared belonged to the same sense.[4] It is here that Dr. Münsterberg's theory decisively breaks down; as is pointed out by Dr. Martius, in his admirable review of the research filling pt. iii.[5]

Dr. Martius's criticism is, indeed, so exhaustive that one cannot do much more than repeat him in dealing with this portion of the *Beiträge*. His arguments are shortly as follows: (1) Muscle-sensations do not only differ in their time- and space-relations, as Dr. Münsterberg declares; and, if we owe our recognition of differences of space and time to muscle-sensations, we cannot refer differences of intensity to muscle-sensations which are already temporally and spatially different. (2) According to the theory, the whole sum of possible sensations should form a single intensive series; that they do not is shown by the necessity of taking an arbitrary starting-point for the comparison of disparate stimuli. (3) The key to the experimental results is the fact of the relative difference-threshold; which supplies consciousness with an unit of comparison. Dr. Martius writes: "The fact of the difference-threshold forces us to the conclusion that between any two points of the ascending stimulus-scale there is always and alone possible a numerically definite succession of intensively graduated sensations; while the stimulus increases continuously. . . . The interspace between two sensations of different intensity, which belong to the same sense, may be called a psychical distance. . . . Such a distance would be naturally measured by the number of possible sensations (determinable by the threshold of difference) which it includes: the greater their number, the greater the distance. One can thus say of Münsterberg's experiments that they are concerned with the inter-

[1] Pp. 72-3. [2] Pp. 77-8. [3] Pp. 81, 82-3. [4] P. 85.

[5] Martius, *Zeitschrift für Psychologie u. Physiologie der Sinnesorgane*, i. 203. A special error in these experiments is pointed out by Prof. F. Angell, in an as yet unpublished investigation:—"Es ist . . . zu bemerken dass, in der Berechnung der Lichtempfindungsaequivalente aus Scheibenversuchen, Münsterberg die Proportionalität von Helligkeit und Gradezahl der weissen Sectoren angenommen hat; was keineswegs der Fall ist" (cp. *Beiträge*, iii. 88).

comparison of different psychical distances. Such a comparison . . . could only be exact if there were one definite starting-point for the determination of all possibilities of sensation."[1] The evenness of Dr. Münsterberg's results is to be explained by the fact that he "operated with but comparatively few and very distinctly different stimulus-pairs".

Dr. Münsterberg's polemical aim is the demolition of a *soi-disant* "theory" or "metaphysic" of Apperception.[2] Like pulpit atheism, this theory is a thing of straw, which the author sets up and knocks down with a wearisome monotony. The serious part of the matter is that he has fathered the "metaphysic" upon Wundt, and has so succeeded in leading others into error.

According to Wundt, consciousness at any moment is the sum of the mental processes then existent.[3] The ultimate elements of all psychical processes are three: (1) the pure sensation; (2) the tone of feeling attaching to it; and (3) apperception. Our ideas, therefore—complexes of (1) and (2)—present themselves to consciousness as the results of our own activity.[4] Whatever Wundt's apperception-theory is, therefore,—and space does not allow of anything like a full discussion,—it certainly is not a theory of a power, external to consciousness, acting upon conscious content.[5] Yet this is the view which Dr. Münsterberg would fain have us believe he has found in the *Physiologische Psychologie!* It is, on the contrary, the case that his elaborate description of consciousness contains elements which are completely foreign to Wundt's doctrine: since, as was stated above, there is no place in this for a *Bewusstseinsform*.[6] It is clear that Dr. Münsterberg has been misled by the well-known Parable of the Eye in Wundt's preliminary discussion of Attention and Will; but this only shows how dangerous it is for an author to endeavour to aid his readers by means of an analogy.[7]

The number of passages in which Dr. Münsterberg represents the Wundtian apperception as a foreign power, which arbitrarily invades the content of consciousness, is legion.[8] In several

[1] *Loc. cit.*, 205-7. [2] *Beiträge*, i. 89.

[3] See "Ueber die Methoden der Messung des Bewusstseinsumfangs," *Phil. Studien*, vi. 250: "Nicht ein seinem Inhalt selbständig gegenüberstehender Thatbestand ist aber das Bewusstsein, sondern lediglich dieser Inhalt selber". Cp. *Phys. Psych.* ii. 226.

[4] See *System der Philosophie*, pp. 380 ff., especially p. 385: "Damit wird das Vorstellen zu einem Geschehen, welches wir zugleich als unser eigenes Thun auffassen".

[5] Cp. Külpe, "Die Lehre vom Willen in der neueren Psychologie," *Phil. Studien*, v. 427 ff.

[6] *Beitr.* i. 31, 38-41. [7] *Phys. Psych.* ii. 235-6; *Beitr.* i. 35, ii. 70.

[8] I cannot be sure that I have noted them all, but the following are the most obvious: i. 45, 50, 52-3, 107, 112, 159; ii. 1, 62, 100-1, 111, 122-4, 134-5; iii. 1, 120, 122. Mr. Sully has noticed this misrepresentation; *loc. cit.*, p. 135.

places he triumphantly refutes his straw-man, leaving the real apperception-theory absolutely untouched.[1] And this attitude leads to further complications of error. When, *e.g.*, the author declares that the results of Dr. Thumb's research are irreconcilable with the apperception-hypothesis, and had been pronounced to be so beforehand by Wundt, he forgets that the "shortened reaction" in the two cases is not the same thing. While Wundt presupposes that the attention is wholly concentrated upon the reaction-movement, for himself it is directed at once upon motion and stimulus.[2] Again, "apperception in the narrower sense" is not the "associatively occasioned idea arising from the fusion of stimulus-idea with the various strain-sensations of attention ('that which I hold fast is the word so-and-so'),"—but attention itself.[3]

Nor do Wundt's pupils fare much better. His whole "school" is said to be divided by heterogeneous apperception-theories: the whole literature of the "physiologico-psychological apperception-psychology" shows a purposed avoidance of the real difficulty of psychophysics.[4] It is a little confusing to be told that one is at variance with people with whom one had imagined oneself to be on the friendliest terms; and it is only fair that Dr. Münsterberg should be asked to give references for his statements.

To come to particulars. In criticising Ludwig Lange's research, in pt. i., Dr. Münsterberg expresses the opinion that the length of the "extreme sensorial" reaction was due to the intervention of an act of reflexion, and not to the changed direction of the attention.[5] A few pages later he makes the assumption that the times in another set of reaction-experiments are to be explained by a particular application of "Wundt's apperception-theory" on the part of the reagents.[6] Both suggestions are purely gratuitous and ungrounded. Again, the reader of the *Willenshandlung*, who is also acquainted with Dr. Külpe's criticism, will be hardly less than amazed when he reads the counter-criticism in the *Beiträge*.[7] One can only suppose that Dr. Münsterberg's description of consciousness has satisfied him so well that he judges everything by its standard: though this, indeed, is no excuse for the tone he adopts. Lastly, the wholesale depreciation of the Leipsic work on the Time-sense is surely unjustifiable.

Two other points must be noticed in this connexion. The experiments of von Kries, which are quoted in support of the author's interpretation of Lange's sensorial reaction-times, had

[1] Cp. i. 112, 118, 121, 169, 172.

[2] *Phys. Psych.* ii. 265, 269; *Beitr.* i. 110-1, cp. 114.

[3] i. 162-3. [4] i. 28, 45, 49.

[5] i. 75. The author has apparently forgotten his own experiments upon the length of the reflexion-reaction.

[6] i. 79; Merkel, "Die zeitlichen Verhältnisse der Willensthätigkeit," *Phil. Studien*, ii. 73 ff.

[7] Külpe, *Die Lehre vom Willen, &c.* (1888), pp. 53-66; *Beiträge*, i. 158-9.

been already discussed by Wundt. It is in the highest degree probable that the short times which von Kries obtained for reactions involving an act of distinguishing depend simply upon automatic coordination. So far from proving, therefore, that Lange's reactions included an act of reflexion, von Kries's results only serve to emphasise the influence of practice in researches of this kind. The pit which was digged for another, Dr. Münsterberg and his choice-times are fallen into it themselves.[1] And, secondly, Goldscheider's careful investigation into muscle-sense is handled with an audacity which one cannot but admire. Its main conclusion does not fit in with the theory of the *Beiträge*. But Dr. Münsterberg undauntedly subsumes it to his own view; and, in doing this, does away with it altogether! Of four possible causes, one is shown to be the true cause: whereupon it is declared that this only means, that all four are variously active in producing the result. The passages must be read to be believed.[2]

[1] ii. 75; von Kries, "Ueber Unterscheidungszeiten," *Vierteljahrsschrift für wiss. Philosophie*, xi.; Wundt, *Phys. Psych.* ii. 324.

[2] ii. 20-1, iii. 31. Goldscheider, "Untersuchungen über den Muskelsinn," *Du Bois-Reymond's Archiv für Physiologie*, 1889, pp. 369 ff. (especially pp. 495 to 502):—"Für die Perception der feinsten Bewegungen die Muskeln . . . sind sicher ohne Bedeutung" (p. 495). "Die Dehnung, bez. Erschlaffung, welche die zwei articulirende Knochen verbindenden Muskeln erleiden, ist bei gleichem Drehungswinkel verschieden, je nach der gegenseitigen Lage der beiden Knochen" (p. 496). On the theoretical side, cp. Müller and Schumann, "Ueber die psychol. Grundlagen der Vergleichung gehobener Gewichte," *Pflüger's Archiv*, xlv. 37 ff., especially p. 65:—"In keinem Fall ist mit einer und derselben Reizung der sensorischen Fasern des in Betracht kommenden Muskels oder vielmehr Muskelcomplexes stets eine u. dieselbe Lage des Gliedes verknüpft; was doch erforderlich sein würde, wenn eine brauchbare Association zwischen Muskelempfindung (oder vielmehr Muskelempfindungscomplex) und Lagevorstellung sich ausbilden sollte". The Editor appears not to have recognised the decisiveness of Goldscheider's results in this connexion; and so to have allowed himself to be misled by Dr. Münsterberg's representation (MIND, p. 525). Both he and Prof. Horsley (*Nineteenth Century*, June, 1891, p. 857) ascribe to Wundt an interpretation of the "feeling of effort" or *Innervationsempfindung*, which is not to be found in the third edition of the *Phys. Psych.* (see ii. 404). Prof. Horsley, in the same article (p. 859), describes the result of Goldscheider's work as the "differentiation of the elements of muscular control"—comparing it with that of Münsterberg and Aubert. This description cannot have been meant to be exact. [Shortly after referring as I did to Wundt's *Innervationsempfindung* in MIND xv. 525, I found to my regret that I ought not to have omitted to consult the latest edition of the *Phys. Psych.*, in which his earlier doctrine is no longer maintained. As to Goldscheider's research, having unfortunately not even yet been able to read it, I have still no right to a definite opinion, one way or other, on its "decisiveness"; but the various references to it that I have seen lead me to doubt whether he has been more careful than the other inquirers to make that distinction between "Muscular Sense" and "Sense of Movement" which, as more than once urged in MIND, seems to me of fundamental importance in the case.—EDITOR.]

Dr. Münsterberg's application of his experimental results is threefold. Those of pt. i. serve as the basis of his Association-theory; those of pt. iii. as the basis of a new theory of the measurement of Intensity (for this is what the "Neue Grundlegung der Psychophysik" consists in);[1] and the whole series of researches, forming practically a psychology of the Muscle-sense, is interpreted as a confirmation of his general psychophysical theory—the conditioning of the psychical by the physical.[2] The discussion of Association has been touched on by the Editor.[3] Dr. Münsterberg has published experiments bearing upon the question in the *Zeitschrift für Psychologie*, but results and interpretation are too doubtful to help his theory. One would like to know, as a matter of curiosity, whether the sensations of innervation on which one's logical thinking depends are memorial representations of the muscle-sensations of the Time-sense investigation,—which can alter in intensity; or of those of the "Neue Grundlegung,"—which cannot.[4] The theory that intensity of sensation is measured by means of muscle-sensation or sensation of movement has already been incidentally discussed. It has been pointed out that it involves a circle; while it was elsewhere shown that Dr. Münsterberg's general idea of the muscle-sense is in conflict with ascertained physiological fact. And even if the dilemma were recognised, and the choice really lay between an apperception-metaphysic and his own dogmatic statement that unless muscle-sensation forms a part of conscious content there can be no consciousness of any phenomenon whatever,[5] one would be inclined to prefer the former, as the less audacious position of the two. The more general psychophysical theory must occupy us a moment longer; for the passages in which it is referred to in the *Beiträge* furnish yet another example of the looseness of the author's manner of writing.

[1] Cp. Martius, *loc. cit.*, p. 206.

[2] Martius, p. 199; O. K. in Zarncke's *Literarisches Centralblatt*, May 16, 1891, p. 711; Stumpf, *Tonpsychologie*, ii. 559.

[3] MIND, xv. 244-5.

[4] i. 160, &c., ii. 26, iii. 32; *Zeitschr. f. Psych. und Phys. der Sinnesorgane*, i. pt. 2, pp. 99 ff. "Die Association successiver Vorstellungen". Where so many have sinned,—some in the face of their own definitions,—it is, perhaps, unfair to find fault with Dr. Münsterberg in particular, but why does he so often talk of *Empfindung* and *Gefühl* as if the terms were interchangeable? English writers, like Prof. Bain and others, are partially excused in such confusion by the poverty of the language (cp. Scripture, "Zur Definition einer Vorstellung," *Phil. Stud.* vii. 221). Would it not be possible, in this special case, to avoid much ambiguity by the introduction of a verb "to sense," as = *empfinden?* The word is commonly employed in New England; and the Editor has called my attention to the fact of its use by so good an English writer as Laurence Oliphant, in 1872 (see Mrs. Oliphant's *Memoir of Laurence Oliphant*, ii. 101)—doubtless borrowed by him from his American associates.

[5] iii. 112: "Wo keine Muskelempfindung in den Bewusstseinsinhalt eingeht, da verschwindet überhaupt jedes bewusste Erlebnis".

In his *Willenshandlung*, psychical phenomena are regarded as conditioned throughout by their physical substrate. "All conscious content . . . . consists in sensations. Every sensation has its material condition in the excitation of the ganglion-cells of the cerebral cortex."[1] Yet, in the opening pages of the *Beiträge*,[2] we are forbidden to think of this conditioning as in any way causal; "the idea of a causal connexion is here quite unjustifiable". It is rather the case that the "material changes produced in the brain by physical stimulation of a sense-organ . . . have a psychical inner side; so that this excitation of the ganglion-cells is the condition of the appearance of a certain sensation in consciousness, while nothing of its physical consequence is lost". The sensation is the "attendant phenomenon of a definite physiological process; its appearance following necessarily from the presence of the physical conditions".[3] Now the use of the word "condition" (*Bedingung*) certainly implies the existence of the causal nexus which the author denies. If, however, we are to pay more regard to the negation, then we are left with a mere casual connexion between mind and brain, and a dogmatic assertion that the processes of the former make no drain upon the physical energy which excites the latter.

Dr. Münsterberg has deserved well of the science, in so far as his publications have given a great impetus to work in Germany, America, and England. In Germany the criticism has been almost without exception hostile: Prof. James has welcomed anti-Wundtian doctrines with open arms: while in England the subsumption of the whole mass of German results under traditional English theories was a project with which our own psychologists could not but sympathise. With these facts in mind, I have endeavoured primarily to show that, whether the theories of the *Beiträge* stand or fall, their experimental foundation has very little positive worth. Dr. Münsterberg has the fatal gift of writing easily—fatal especially in science, and most of all in a young science, where accuracy is the one thing needful. At least once he contradicts himself in successive paragraphs; and at least once an hypothesis at the top of a page has become certainty at the bottom.[4] Psychophysics will not gain by this manner of exposition. One must have the dry figures and circumstantial details which render it possible to control an investigation, and which stand fast when called on to bear the weight of a theory. The literature of such a science should make no pretence to be otherwise than special and difficult. What Byron said of "easy writing" is too hackneyed to quote, but it has a serious application to these three parts of Dr. Münsterberg's *Beiträge*.

[1] P. 140. [2] i. 18, 19. [3] i. 39. [4] i. 73, 88.

ON THE ORIGIN OF MUSIC.

By Herbert Spencer.

A few words from me in comment upon the criticisms of Dr. Wallaschek and Prof. Cattell, in Mind No. 63, seem needful to prevent the spread of misapprehensions.

Possibly without intending it, Dr. Wallaschek leaves his readers to suppose that I do not recognise, or do not adequately recognise, rhythm as an essential component of music. But the following passage will show, not only that I fully recognise it, but that I trace it back to the sources he indicates :—

"Even the *rhythm*, which forms a remaining distinction between song and speech, may not improbably have a kindred cause. Why the actions excited by strong feeling should tend to become rhythmical is not obvious, but that they do so there are divers evidences. There is the swaying of the body to and fro under pain or grief, of the leg under impatience or agitation. Dancing, too, is a rhythmical action natural to elevated emotion. That under excitement, speech acquires a certain rhythm, we may occasionally perceive in the highest efforts of an orator. In poetry, which is a form of speech used for the better expression of emotional ideas, we have this rhythmical tendency developed. And when we bear in mind that dancing, poetry, and music are connate—are originally constituent parts of the same thing—it becomes clear that the measured movement common to them all implies a rhythmical action of the whole system, the vocal apparatus included; and that so the rhythm of music is a more subtle and complex result of this relation between mental and muscular excitement." (*Essays, &c.*, lib. edit., vol. ii. p. 413).

But Dr. Wallaschek differs from me by concluding that "the origin of music must be sought in a rhythmical impulse in man"; and that "men do not come to music by way of tones, but they come to tones and tunes by way of the rhythmical impulse". In this view I cannot coincide, for the reason that it regards music as acquiring its essential character by a trait which it has in common with other things, instead of by a trait which it has apart from other things. While music must be classed as one of sundry rhythmical products, it becomes music only by that which distinguishes it from the other rhythmical products. This is clearly shown in the contrast between spoken verse and song. Both are rhythmical, but spoken verse does not become song by any development of rhythm. It becomes song by the inclusion of an element additional to rhythm. It may be admitted that the combinations of tones are moulded into a rhythmical form, at the same time that it is contended that in the absence of combinations of tones there is no music.

Is it that Dr. Wallaschek has read only my recent article in Mind No. 60, and has not read, or has not recently read, the original essay on "The Origin and Function of Music"? It would almost seem so from one of the objections he raises, which runs thus :—"Music is an expression of emotion, speech the expression of

thought. If we assume that music originates in, and is developed from, speech, we must also assume that emotion is developed from thought." The misleading influence of a wrong name is well illustrated in the objection thus raised. The name "speech-theory" was used by Mr. Gurney in his argument against me: whether previously used I do not know; but it is a name which has received no countenance from me. Though it is not true that speech is "the expression of thought" exclusively, since the cadences which ordinarily constitute part of it habitually express feeling, yet the intellectual element is so dominant that the emotional accompaniment is scarcely suggested by the word. As used by Mr. Gurney, "speech-theory" seemed to me very much a nickname; and it has now proved to be a mischievous nickname, as will be seen by the following extracts from my original essay:—

"All speech is compounded of two elements, the words and the tones in which they are uttered—the signs of ideas and the signs of feelings. While certain articulations express the thought, certain modulations express the more or less of pain or pleasure which the thought gives. Using the word *cadence* in an unusually extended sense, as comprehending all variations of voice, we may say that *cadence is the commentary of the emotions upon the propositions of the intellect.*" (*Essays, &c.*, lib. edit., vol. ii. pp. 421-2).

And the whole argument of the essay is to show that it is from this emotional element of speech that music is evolved—not from its intellectual element. For instance:—

"Thus, in respect alike of *loudness*, *timbre*, *pitch*, *intervals*, and *rate of variation*, song employs and exaggerates the natural language of the emotions." (*Ib.* 411.)

"Vocal music, and by consequence all music, is an idealisation of the natural language of passion." (*Ib.* 413-4.)

On reading these passages Dr. Wallaschek will, I think, see that the view I really hold is not touched by the objection he raises.

Turning to Prof. Cattell's criticism, I may in the first place remark that the nature of overtones (or harmonics as they were called in my early days) and their relations to the fundamental tone are not unfamiliar to me, as he may find in sundry places; among others on p. 197 of vol. iii. of my *Essays*. Prof. Cattell says:—"Mr Spencer seems to hold that nothing in a single tone corresponds to a combination of tones, and that the intervals used in music are not found in nature". That I do not hold this I have just pointed out, and I do not see any ground for the statement that I *seem* to hold it. The sentence on which Prof. Cattell bases his assumption as to my meaning is this:—

"Dependent as harmony is on relations among rates of aerial pulses, its primary basis is purely mechanical; and its secondary basis lies in the compound vibrations which certain combinations of mechanical rhythms cause in the auditory apparatus".

This sentence expresses no opinion respecting the simplicity or complexity of musical tones. It refers to tones as commonly conceived, taking no note of the overtones which give their *timbre;* and implicitly refers to the harmony produced by a combination of two or more such tones. Harmony as ordinarily spoken of, and as alone recognised in music, with which I was dealing, presupposes tones that are separately distinguishable by the ear and have something approaching to likeness of volume: a requirement which becomes obvious on perceiving how little harmony can be obtained between the note of a violin and that of a powerful organ-pipe. Though the overtones which, joined with the fundamental tone, give its *timbre*, bear to it relations like those which the notes of a chord do to one another, yet they are not recognised as producing harmony. It is true that in the dying sound of a deep-toned church bell, the overtones may be distinguished, and their harmony with the fundamental tone perceived; but in any ordinary musical tone no such discrimination is possible. To perception the tone seems simple, and in dealing with musical effects we are dealing with perceptions. Harmony, as ordinarily understood in music, and as spoken of by me, is concerned with the fundamental tones, and ignores the overtones; as is clearly shown by the fact that two notes of widely unlike instruments are said to be in unison, or in harmony, if their fundamental tones have the requisite congruity: no attention being paid to the overtones.

Of course I should willingly, could I do so, accept Prof. Cattell's view that "harmony has been developed from melody"; but I cannot see my way to do this. To establish the evolution of the one from the other, there must be found some identifiable transitions between the combinations of tones constituting *timbre*, which do not constitute harmony to our perception, and those combinations of tones which do constitute harmony to our perception; and I know of no such transitions. So far as I know (and I speak from memory, for I write far away from books), harmony commenced with the fugal repetition of a melody in ecclesiastical chants. Though the melody was the same, and the effect was produced by one choir commencing a bar or two after the other, yet the new kind of effect suddenly achieved cannot be considered as *evolved*, without stretching somewhat unduly the meaning of the word.

VI.—NEW BOOKS.

Riddles of the Sphinx. A Study in the Philosophy of Evolution. By A Troglodyte. London: Swan Sonnenschein & Co., 1891. Pp. xxvii., 468.

The "Riddles of the Sphinx" are man's "relation to the World, to his Cause and to his Future". The solution of the first is found in a doctrine of the ultimate plurality of real existences; of the second, in the doctrine of "a personal and finite but non-phenomenal God"; and of the third, in a theory of immortality, graduated according to the degree of consciousness attained by the soul during its past. The ultimate real existences are "spiritual entities". Before Time and the "world-process" they existed as a "chaos" of absolutely isolated and independent beings. The world-process began by a determination of the Divine Spirit to form the ultimate existences into a harmonious cosmos. From the interaction of the Deity and the many individual beings, consciousness results. The form it takes in man is consciousness of the World on one side and of the Self on the other. With the world-process Time begins; and with Time, Becoming and Evil are conjoined. Evil springs from the resistance of the ultimate Egos to the harmonising Evolution of the cosmos. The process of Evolution, through all its stages, consists in the perfecting of individual existences by their grouping into more and more perfect societies. After molecules have been formed from atoms and organisms from cells, the process is continued in the formation of animal and human societies properly so-called; the aim to which it is divinely directed being the coincident formation o perfect individuals and of the perfect societies to which they are adapted. The world-process is finite, having both a beginning and an end. At its beginning, is to be conceived the "pre-cosmic" state where no order existed; at its end, the "post-cosmic" state of perfect order and adaptation which will be attained when Becoming and Time have passed into Being and Eternity. This final state is the eternal and perfect activity of "perfected individuals in a perfect society".

The method to be adopted in philosophising is the "concrete metaphysical," opposed at once to the "abstract metaphysical" and to the "pseudo-metaphysical" methods. The abstract metaphysical method is that of Plato, and of the Platonists of all periods. It rightly seeks to explain the lower by the higher, but is wrong in its dualistic separation of the two. The pseudo-metaphysical method may also be called "physical," and is the method of those who would construct philosophy out of pure science alone. It is right in so far as it insists on the continuity of all things and rejects dualism, but wrong in trying to explain the higher by the lower. The characteristic of the concrete metaphysical method is to be consistently and consciously "anthropomorphic," explaining everything from individual existences viewed as analogous to ourselves. As principles generally compatible with the true method in philosophy, the author recognises Berkeley's "spirits" and Leibniz's "monads," together with Aristotle's concrete individual viewed as primary reality (p. 164). All other principles are either "abstractions" or attempts to explain the higher by the lower. With the true metaphysical principles, modern science, and in particular the doctrine of evolution, must be shown to be in harmony. Science must besides con-

tribute elements to the structure of philosophy, though these cannot by themselves furnish a metaphysical doctrine. The philosophical construction must give satisfaction to human hopes. To satisfy practical aspirations is indeed the final aim of philosophy. Whoever fails to solve the riddles of the Sphinx, and is logical, becomes a prey to pessimism. The pessimism which results from the "positivistic" attempt to do without metaphysics is the present motive for philosophising; as historically the motive has always been some inexplicability that troubled the unquestioning acceptance of life and the world.

Methods of philosophising to be altogether rejected are the "epistemological" and the "psychological," or direct criticism of the validity of knowledge and the powers of the mind. The only reply that can be made to philosophical scepticism is the indirect one of constructing a metaphysical scheme that satisfies all aspirations. The choice between the doctrine attained and scepticism is in the end an act of faith in one of two alternatives. On the one side, we are led from the positivistic rejection of metaphysics to philosophical Agnosticism, or the doctrine of the Unknowable; from this to absolute Scepticism, which destroys scientific along with philosophical certitude, and from this to Pessimism, or the doctrine that knowledge is practically as well as theoretically invalid, the ground of things being wholly perverse or irrational. On the other side, reconstruction of knowledge with the aid of metaphysical principles leads to a system of beliefs which, if we accept, we can regard the world as rational, or at least tending to rationality. The pessimistic conclusion of the one line of thought may be considered as a reduction to practical absurdity, and the satisfaction of our aspirations, which is attained by means of the other, as a justification of the principles adopted. There is, at any rate, no other justification.

The "reduction to pessimism" is an argument urged not only against the schools that reject metaphysics, but also against the "Pantheistic Monism" which the author sees to be the rival of his own Pluralism. The monistic doctrine is also attacked on intellectual grounds. Its principal weakness is found to be the assertion of the "real Infinite". The infinite in any admissible sense is only a potential infinity in our thought. Intellectually, the idea of an "infinite whole" is self-contradictory. Morally, the attribution of infinity to God requires that all finite individuals, being *coexistent*, should be regarded as *therefore* coequal manifestations of the divinity (p. 314); whence the absolute distinction between good and evil vanishes. To his positions here the author seems for once to attribute a greater degree of novelty than they possess; but his argument is evidently independent, and deviates in some points from that of his predecessors.

It may be said generally that the "Troglodyte's" pure metaphysics or ontology is of greater interest than the methods by which he arrives at it. Rejection of the "epistemological" and "psychological" methods marks a fundamental defect in procedure. When these are rejected the "concrete metaphysical method" seems to be describable simply as "unanalytic". The doctrine found to be common to Berkeley, Leibniz and Aristotle is really a result rather than a "method". By "Agnosticism" is not usually meant Mr. Spencer's doctrine of the Unknowable, against which the author in his discussion of the agnostic position exclusively directs his attack (bk. i. ch. 2). Biological evolution is rather vaguely conceived; and the error is committed of supposing that Mr. Spencer's wider application of the doctrine was subsequent to the Darwinian revolution in zoology (pp. 177-9). "Real infinity" is a little too easily disposed of, *e.g.*, when it is said to be inconsistent with the doctrine of evolution,

because evolution is a "process," and if a world infinite in time were engaged in a process it would "require an infinite Time to reach any given point in the process, and an infinite number of infinities to reach the present, *i.e.*, would never reach the present at all" (p. 257). By the hypothesis, the infinite time required is always given. The author seems to hold at once that Space is only ideal, and that real Space is limited. And when, in the course of his discussion of "Idealism *versus* Materialism," he says (p. 259) that "the existence of a reality outside ourselves is a fact, irresistibly attested by feeling, and one which does not require further proof," he might almost be taken for a "natural realist".

In this last sentence, however, he does not do himself justice. As we go on, we find him arriving at an idealism of his own that is not defective from its incompleteness, but only from absence of an epistemological or psychological foundation. Dualism is expressly rejected, and matter in its scientific as well as in its ordinary sense is viewed as purely phenomenal. The external world is held to be an appearance produced by the interaction of spiritual "monads". We miss a defence of the position in relation to the philosophical analysis of substance generally; but the author at least sees clearly the weakness of an attempt to found a philosophical theory on the objective assumptions of physical science. In detail, his rendering of monadism is a decidedly interesting effort of philosophical imagination. The theory of immortality, in particular, is well worked out. The essential idea here is that the "memory" of the monads always persists, but that it only begins to persist from one life to another under a personal form when a sufficient concentration of consciousness has been attained.

The interest of speculations such as his own is for the author—according to some of his opening remarks—that, if accepted as true, they furnish a complete answer to pessimism, and that without such an answer practical life in accordance with reason is impossible. Others may think they retain an interest, though practical philosophy can be constructed without them; and, in fact, the author attempts no ethical construction on the basis they supply. But where, in any case, does he find philosophic support for the view of certitude expressed at p. 19? "While science must remain conscious of all sorts of improbable and barely possible theories, seeing that they may suggest fruitful experiments and so enlarge the bounds of knowledge, philosophy, when it has once decided on the right solution, must sternly and rigorously put aside all its rivals, even though its choice was originally arrived at by a very slender preponderance." This would not be accepted by the theorists of the "practical reason," with whom the author has some affinities, any more than by scientific agnostics; if at least it implies that philosophy, having chosen, ought not to remain conscious of any doubt that affects its conclusions. Is it not also rather hasty to make rejection of pessimism depend on acceptance of a pluralist metaphysic? Among the historical systems Buddhism found its principle of explanation in the Individual and Stoicism in the Whole. Neither system is thought to be wanting in logical elaboration; yet the first is pessimistic and the second optimistic. [T. W.]

The Insanity of Genius and the General Inequality of Human Faculty, physiologically considered. By J. F. Nisbet, Author of *Marriage and Heredity*, &c. London: Ward & Downey, 1891. Pp. xxiv., 340.

Mr. Nisbet's book is mainly a collection of more or less well-authenticated facts relating to the nerve-disorders of every kind that

have accompanied genius either directly or by way of heredity. The collection itself is extensive and interesting, whatever may be thought of the interpretation. The author's position is that "genius and insanity are, in reality, but different phases of a morbid susceptibility of, or a want of balance in, the cerebro-spinal system". Or, as it is expanded in another passage: "Genius, insanity, idiocy, scrofula, rickets, gout, consumption, and the other members of the neuropathic family of disorders, are so many different expressions of a common evil—an instability or want of equilibrium in the nervous system". Genius is here taken in the widest sense, as including all the higher manifestations of the practical, as well as the scientific and artistic, types of mind. In all cases, "what runs in the blood is nerve-disorder, of which genius is the occasional outcome". The defect of Mr. Nisbet's attempted proof of this thesis is that he hardly goes beyond an enumeration of positive instances superficially in its favour. The necessity of a comparative study of men of genius and undistinguished persons is indeed glanced at in the last chapter, but that is all. For anything like scientific induction, comparison should of course have been systematic and continuous. As a preliminary to the comparative treatment, it would have been desirable to attempt some approximate *psychological* definition of genius on the one side and insanity on the other. From this the author perhaps cuts himself off by his view that scientific knowledge of mind only began with experiments in cerebral localisation; but even from the purely physiological point of view there are obvious defects in his procedure. Genius is said to consist in "morbid susceptibility" of the nervous system. But how are we to know whether any particular degree of susceptibility is "morbid" or not? According to the author, simply by the presence of genius. For example: "Such immense creative power as Shakespeare's can only be understood in connexion with a morbid impressionability". If this does not quite reveal the argumentative process, more light is thrown upon it by another position, of which use is made throughout the book. "Both short life and long life in excess are symptoms of the neuropathic condition, as, indeed, is every marked departure from the mean of existence." In other words, superiority and inferiority to the average are to be classed together as deviations from the normal; and all deviations from the normal are to be called morbid. Then again, in particular citations of facts, the thesis to be established is taken for granted in a curious way. Accomplishments or distinctions in the ancestors and connexions of men of genius are cited in support of the author's theory just as if they had already been proved to be "neuropathic". A few instances may be quoted. "Southey states that Cowper's father and uncle could both write verses—an ominous gift!" (p. 84). "Wordsworth's father was a man of 'great force of character'—a phrase which occurs with remarkable frequency in the family history of the insane" (p. 120). The "unbalanced condition of mind" of Bulwer Lytton's maternal grandfather "revealed itself in an extraordinary capacity for acquiring languages ancient and modern" (p. 128). Browning's father "possessed the significant gift of verse-writing" (p. 135). Balzac's mother "is described as a woman of 'great vivacity of mind, untiring activity, and extraordinary firmness'—phrases which, in the circumstances, are of some significance to the pathologist" (p. 135). "Among other peculiarities the elder Balzac had an extraordinary memory" (p. 136). Alfred de Musset's "mother's family appears to have been characterised by some nervous instability, his maternal grandfather having a prodigious memory" (p. 137). "Victor Hugo's mother, for her part, had also some peculiarities, being, in particular, energetic and sensitive" (p. 142).

"There was a marked strain of literary ability in Corneille's family" (p. 144). "With the insane temperament" Michel Angelo "inherited from his father longevity, both dying at the age of ninety" (p. 174). "The hereditary influences which conduced to Marlborough's disorders are indicated in the fact that his father was a man of letters," &c. (p. 194). "Of George Herbert's brothers one was a sceptical writer, the second a renowned duellist, and the third a dashing naval officer—the two last showing that courage, like so many forms of genius, depends upon a congenital want of mental balance" (p. 251). Would not all these examples seem more appropriate in an argument for "hereditary genius"? It is worthy of note that the only detailed case in which the author tries to show directly an "access of faculty along with morbid conditions" (p. 44) is much more easily explicable on the "hereditary genius" than on the "insane" theory.

Differences in the Nervous Organisation of Man and Woman: Physiological and Pathological. By Harry Campbell, M.D., B.S. (Lond.), &c. London: H. K. Lewis, 1891. Pp. xi., 383.

This is a book of investigation more than of definitive general results, but, as such, it is of great interest. Its central subject is the comparative physiology and pathology of the nervous system in men and women—one conclusion being that women are less liable to gross lesions of the nervous system, and recover more easily from nervous disease, than men. As a groundwork for the special investigation, the origin of sex in general is considered; Weismann's views being carefully discussed. Inclining, for reasons given, to the position that really *acquired* characters are not inherited, the author suggests, in distinction from Weismann, that the "germ-plasm" is not to be regarded as a homogeneous substance, but as consisting of individualised units. The ground of all secondary sexual differences he is disposed to find in extrinsic rather than intrinsic causes; and even, to a considerable extent, in extrinsic causes acting during the lifetime of the individual. In connexion always with his physiological and pathological basis, he deals very fully with the comparative psychology of the sexes; and is thence led on to general human psychology. Here he has been especially influenced by Dr. Hughlings Jackson, whose views he applies with independent grasp to the psychology of volition. In strength of will, as in general intellectual power, Man is at present, he finds, on the average superior to Woman, but this average superiority is almost wholly, if not wholly, due to training. The important difference is not in intellect or will (which largely depends on intellect) all round, but consists in the far greater "variability" of man than of woman. The difference is seen throughout the animal kingdom; in the human race it displays itself (on the positive side) in the fact that "genius of the highest order is practically limited to the male sex". These are only the author's most general points. His detailed treatment is marked by careful collection of facts, many of them the result of personal investigation, and by forcible reasoning on them at every stage. Both for the material and the stimulus it supplies, the book ought to be in the hands of all psychologists.

The History of Human Marriage. By Edward Westermarck, Lecturer on Sociology in the University of Finland, Helsingfors. London: Macmillan & Co., 1891. Pp. xix., 644.

This is the completed work begun with a dissertation noted in Mind, xv. 288. Its specifically sociological character sets it outside the province of this Review, but it is not out of place to remark that the author's

equipment, logical as well as psychological, for his task is of a very exceptional order. Such an effectively mustered collection of facts bearing more or less directly on the human relation of marriage did not before exist, and the author's conclusions as to the development of the relation from its biological beginnings are in general as circumspectly as they are always independently reasoned out.

Justice: being Part IV. of *The Principles of Ethics.* By HERBERT SPENCER. London: Williams & Norgate, 1891. Pp. viii., 291.

The author has used his reviving strength since 1890 (after four or five years of disablement) to advance with that crowning division of his system of philosophy upon which most work remains to be done. Within the division he has chosen to follow up the introductory *Data of Ethics* with the present pt. iv.; leaving pts. ii., iii. ("The Inductions of Ethics," "The Ethics of Individual Life") to appear, as he hopes, before the close of next year, and meaning, thereafter, to complete the present beginning of "The Ethics of Social Life" with two more parts—of "Negative Beneficence" and "Positive Beneficence". The *Justice* has a special interest in relation to the *Social Statics* of forty years ago—years during which the author has not stood still either in his general way of ethical thinking or in his judgment on specific ethical topics. Critical Notice will follow (in the Second Series of MIND).

Freedom as Ethical Postulate. By JAMES SETH, M.A., George Munro Professor of Philosophy, Dalhousie College, Halifax, Canada. Edinburgh and London: W. Blackwood & Sons, 1891. Pp. 48.

For the author, "as for Kant, the question of freedom takes the form of a deep-seated antithesis between the interests of the scientific or intellectual consciousness on the one hand, and the moral and religious convictions of mankind on the other". The only hope of finding a place for real free-will is "in another than the Humian, empirical or 'psychological' account of the moral Person or Self". A negative contribution to the vindication of freedom was made by Kant when he showed that the Ego is not itself under the dominion of the categories by which it constructs the world. Hegel's and Green's attempt at a further positive vindication of freedom is found to be unacceptable in so far as it leads to a view of the self which again brings it under necessity. The suggestion is then made that perhaps Personality ought to be regarded as an ultimate term in philosophical explanation. This puts insuperable difficulties in the way of any 'monistic' explanation of the universe. but "we may still accept freedom as the ethical postulate, as the hypothesis, itself inexplicable, upon which alone morality becomes intelligible". Absolute uniformity not having been proved of human action, it is still as open to the advocate of freedom theoretically as it is necessary in view of the demands of morality, to "contend for a power of free and incalculable initiation in the self".

An Introduction to Cudworth's Treatise concerning Eternal and Immutable Morality, with Life of Cudworth and a few Critical Notes. By W. R. SCOTT, First Senior Moderator in 'Logics and Ethics,' Trin. Coll., Dublin. London: Longmans, Green & Co., 1891. Pp. xiii., 67.

The author (whom one takes to be a young man) aspires to do more justice to Cudworth than he thinks the Cambridge philosopher has yet received. He has therefore got ready for press an edition of the ethical

Treatise, and will apparently make its publication dependent on the reception accorded to this *Introduction* sent out before. He has aimed at shortness (which is well) and has therein succeeded; for, apart from a very general summary of the *Treatise* (20 pp.), his own introductory observations run to just 8 pp., and his "Critical Notes" (touching on Butler and Kant) to but 5 more. What is more to the purpose—these few pages give fair indication of familiarity with some at least of the philosophic thinkers upon whom Cudworth draws or with whom he has to be set in relation. By all means, therefore, let us have his edition of the *Treatise*. As to the biographical part, filling nearly one half, of his present little volume, one may not speak with much commendation. It has no novelty, and is crudely written (witness the "howevers" on p. 13 and the "buts" on p. 15). To speak of "Shaftesbury, Warburton, and Burnet" [which Burnet?] as representing "*seventeenth* century criticism" (p. 16), strikes unpleasantly; the "Whitecote" of p. 9 n. is, of course, meant for Whichcote. Generally, what strikes the author most in Cudworth (pp. v., 36), for all his overpowering burden of ancient lore, is his saturation with "the modern spirit". It is a thesis that will need very careful development in the coming edition.

Natural Theology. By Bernard Boedder, S.J. ("Manuals of Catholic Philosophy"). London: Longmans, Green & Co., 1891. Pp. xii., 480.

This volume, completing the "Stonyhurst Series" of philosophical manuals (See Mind, xiv. 290), treats of the questions usually discussed in the Latin text-books under the headings of *Theologia Naturalis* and *Cosmologia*. It is divided, after an Introduction (pp. 1-7) into three books: i. "Of the Existence of God"; ii. "The Divine Attributes"; iii. "The Action of God upon this World".

Essays, Reviews and Addresses. By James Martineau, LL.D., D.D., &c. Selected and revised by the Author. Vols. II.-IV. London: Longmans, Green & Co., 1891. Pp. viii., 576; viii., 579; x., 608.

These volumes, completing the author's collection of his occasional writings (see Mind, No. 62, p. 285), are occupied with topics that have all, more or less, a philosophical import; but in vol ii., designated "Ecclesiastical: Historical," the "practical bearings on human life in historic schools and organised churches" are kept more prominent, while vol. iv., "Academical: Religious," includes, with a series of college-addresses, a selection of hortatory sermons. Vol. iii., "Theological: Philosophical," contains in its first division some essays (on the general thought of Oersted, Mansel, H. Spencer and others) that might equally well have been ranged with those that make up the second. As they stand, the essays or reviews given as expressly "philosophical" are occupied with Whewell as moralist, S. Bailey as logician, Hamilton and Mill as philosophers, Bain as psychologist, and finally with the question "Is there any Axiom of Causality?" This last is raised to a great extent in connexion with Mill's treatment in the *Logic*, and generally, it may be noted, throughout the division it is Mill who, with whatever hostile criticism, receives highest appreciation. In this connexion, an incidental footnote (p. 339) to a trenchant exposure of Whewell's ethical pretensions, in 1845, has a peculiar interest: "The quietness with which this book [J. S. Mill's *System of Logic*, spoken of in the text as "a work which stands almost alone, certainly pre-eminent, among treatises on philosophical method"] has been received affords no test of its destined influence. We believe there are not half-a-dozen persons in England capable of reviewing it." Many other such observations of first-hand historic interest are here reproduced by Dr. Martineau;

and, spread as his writings have been over such a width of time, they thus acquire a value as 'documents,' over and above their intrinsic importance as philosophical judgments always sincerely argued and most eloquently expressed.

Kant's Principles of Politics, including his Essay on Perpetual Peace. A Contribution to Political Science. Edited and translated by W. Hastie, B.D., &c. Edinburgh: T. & T. Clark, 1891. Pp. xliv., 148.

The pieces brought together under this title are, as here named, (1) "The Natural Principle of the Political Order considered in connexion with the idea of a Universal Cosmopolitical History," (2) "The Principles of Political Right considered in connexion with the relation of theory to practice in the Right of the State," (3) "The Principle of Progress considered in connexion with the relation of theory to practice in International Law," (4) "Perpetual Peace: A Philosophical Essay". They are given as a complement to the *Rechtslehre*, translated by Mr. Hastie three or four years ago (see Mind, xii. 301), and as the proper crown of Kant's philosophic activity.

The Time-Relations of Mental Phenomena. By Joseph Jastrow, Professor of Psychology in the University of Wisconsin. ("Fact and Theory Papers," No. vi.) New York: N. D. C. Hodges, 1890. Pp. 60.

A very well-filled paper, giving account of the whole range of recent experiments on the time taken up in mental operations, from "simple reactions" to acts of distinction and choice. The object is "to present a systematic sketch of what has been done, with due reference to the ultimate goal as well as to the many gaps still to be filled".

Étude sur les Arguments de Zénon d'Élée contre le Mouvement, par G. Frontera. Paris: Hachette et Cie., 1891. Pp. 23.

In view of the position taken up by some philosophic teachers in France, that the arguments of Zeno against motion are in part at least irrefutable and prove that it cannot be construed rationally as a reality in the metaphysical sense, the author examines all four arguments from the mathematical point of view. He finds the difficulties in the more plausible arguments (the 'Dichotomy' and 'Achilles') to be caused (1) by taking account of space and its (ideal) infinite divisibility to the exclusion of time, any finite portion of which is infinitely divisible in precisely the same sense, and (2) by arbitrarily fixing the space to be traversed.

Les Hallucinations télépathiques par MM. Gurney, Myers et Podmore. Traduit et abrégé des *Phantasms of the Living* par L. Marillier, avec une Préface de M. Ch. Richet. Paris: F. Alcan, 1891. Pp. xvi., 395.

The 1300 pages of *Phantasms of the Living* are here, in translation, brought down by more than two-thirds, so as to give them the better chance of winning a way with the "positive and sceptical" French mind. For, though France is pre-eminently the land of hypnotic 'subjects,' M. Richet seems to fear that "les revenants et les fantômes" are there more likely than elsewhere to be met with smile or shrug. The boiling-down, of course, could not be done without sacrificing much that was most characteristic and also most valuable in Gurney's massive volumes. Of the theoretic discussions, in which he expatiated with that large power of his, only as much is given as suffices

in any way to string together a free reproduction of the narrative "cases". Granted the principle on which the translation has been made, much praise is due to M. Marillier for his execution of a task of selection far from easy; but one abatement must be made from this acknowledgment. He nowhere states how the original work was actually composed: all of it issuing from Gurney's hand, except some 80 pp. of introduction and supplementary discussion by Mr. Myers. For want of such indication, the French reader is left to puzzle out the difference between the "je" of the (here shortened) Introduction and the "je" of the book. That is a pity; nor is the translator's oversight at all repaired by what *his* introducer says on the subject. For M. Richet, after first going the length of ascribing "une part prépondérante" in the work to Gurney, has so much regard to survivors that he straightway adds apologetically: "Je ne crois pas être désagréable à ses collaborateurs en disant que la part qu'il a prise au plan comme à l'exécution des *Phantasms of the Living* a été considérable". Upon which one can but exclaim—Considerable, indeed! Passing away from this topic, it is interesting to note that M. Marillier translates without yet being a convert to belief in telepathy, but looks for some scientific decision to the statistical inquiry which is now being carried on in different countries and which it is desired to bring to a head for the International Congress to be held in London next year. M. Richet, who may be called a believer already, pushes aside for his part both reasoning and observation (which between them must cover statistical investigation) as decisive tests, and would rely upon experiment only—experiment that should admit of indefinite repetition at will. That seems a still straiter adhesion to method of science, but one's hope of M. Richet's strenuousness is somewhat dashed by the fact that, while he plumply allows that, "malgré tous nos efforts, nous n'avons pu, ni les uns ni les autres, démontrer rigoureusement qu'il y a suggestion mentale, transmission de la pensée, lucidité, sommeil à distance," he yet does not doubt (p. x.) that the experimental demonstration, thus far absent, will soon be forthcoming—and meanwhile is, apparently, satisfied not to let his own conviction wait upon its advent.

La Philosophie du Siècle. Criticisme—Positivisme—Evolutionnisme. Par E. DE ROBERTY. Paris: F. Alcan, 1891. Pp. viii., 235.

In this book the author's philosophic doctrine set forth in *L'Ancienne et la Nouvelle Philosophie* and *L'Inconnaissable* (see MIND, xii. 620, xiv. 456) is expounded anew with developments and modifications. The three typical philosophies of the century are found to be the Criticism of Kant and his successors, the Positivism of Comte, and the Evolutionism of Mr. Spencer. All three are at bottom "metaphysical". "Scientific philosophy" is not yet founded, and we must not expect to see it founded just yet. Before there can be a genuinely scientific philosophy there must be a considerably greater development of psychology and sociology as special sciences. To-day all philosophy is necessarily metaphysical, because in trying to integrate knowledge it inevitably makes unverifiable hypotheses derived from some particular group of sciences. According to the particular group of sciences in which the key to the whole system of things is sought, is the nature of the philosophy. The Critical philosophy takes its origin from Idealism, the Positive philosophy from Materialism, and the Evolutionist philosophy from Sensualism; these three older philosophic doctrines being respectively (as was formerly contended) explanations of the universe by exclusive reference to psychical and social phenomena, to inorganic

phenomena, and to biological phenomena. The three doctrines in their present form tend to converge, and in many ways may be regarded as expressions of a single metaphysical system determined by the state of the sciences generally. (Besides, when their antecedents are strictly examined, all the contemporary systems show themselves to be of mixed origin.) The first law of intellectual development was ascertained to be the dependence of philosophy on the state of the special sciences. This is now supplemented by other laws, the whole dependence within the "intellectual series" being stated in this form:—Science, philosophy, æsthetic and industrial art constitute a series, each term of which depends on all that precede it. Comte's law of the three states is acutely criticised from the point of view attained.

Le nouveau Mysticisme. Par F. PAULHAN. Paris: F. Alcan, 1891. Pp. 203.

This essay—portions of which have appeared in the *Revue Philosophique* under the same title (see MIND, xvi. 152)—is an attempt to forecast the spirit of the immediate future from indications in the philosophy, science, art, and general social movement of to-day. Marked by a certain contrast to the spirit of the immediate past—individualist and more purely intellectual as this was—the "new spirit" has in common with it the effort after exact scientific knowledge. With this it combines the desire for the ideal, for the marvellous, and for "synthesis" both in theory and practice. A transitional step between the "anarchy" resulting from the earlier movement and the "new mysticism" that is beginning to acquire shape, is the "love of evil"—a phenomenon explicable, as the author thinks, by the anarchy of beliefs, the consequent letting loose of repressed desires, a certain persistence of an older moral or religious ideal, and an individual desire for synthesis; the natural result of this conflux of elements being an inverted ideal. By itself, the "love of evil" would lead only to social decadence, but, as it does not exist alone, it may be taken as one symptom of the preparation for a new order. The author's psychological ability is seen in the details of his analysis.

Premiers Principes Métaphysiques de la Science de la Nature. Par EMMANUEL KANT. Traduits par CH. ANDLER et ED. CHAVANNES. Paris: F. Alcan, 1891. Pp. cxxx., 96.

This, the first French translation of Kant's *Metaphysische Anfangsgründe der Naturwissenschaft*, has already appeared in the *Critique Philosophique* (1888-9). It is now preceded by an extensive introduction, setting forth the principles of Kant's philosophy as applied to natural science not only in the *Metaphysische Anfangsgründe* but in his other works. The introduction is divided into five chapters: (1) Metaphysics of Nature in general, (2) Metaphysics of material Nature, (3) Passage from Metaphysics to Physics, (4) Changes brought about by the *Critique of Pure Reason* in the natural philosophy of Kant, (5) On the relations of Kant and Newton. Kant's great result, according to the authors, is "that there are in necessary phenomena—that is to say, in experience—no more than these three elements: logical thought, mathematical quantity, and the material datum".

Der Positivismus vom Tode August Comte's bis auf unsere Tage (1857-1891). Von HERMANN GRUBER, S.J. Freiburg i. B.: Herder'sche Verlagshandlung, 1891. Pp. viii., 194.

Father Gruber here follows up his excellent treatment of Comte's life and work (see MIND, xv. 143) with a not less noteworthy account of the activity of Comte's disciples, as well as of the wider movement of

modern Positivism in general. The earlier volume gave indications here and there of the later developments of thought now treated at length, but it seemed pretty evident that the author had then his special studies for the present volume still to make. These, as regards the more limited field of Comtist Positivism, are marked by all the characteristics that so favourably distinguished his account of the master. Nowhere else is so clear and comprehensive a statement to be found of the varied labours and aspirations of the Comtists of all countries and of every sect—from the heterodoxy of Littré, through the mild orthodoxy of Lafitte with his English and other following, to the strained orthodoxy of Congreve, in turn surpassed by the fanatical devotion of Lemos and other South American hot-heads. It is when the author turns to deal with the larger Positivism (pp. 104-84) that he becomes a less satisfactory guide. Not that here, too, he has not taken manifest pains with some of the more important thinkers (English, French, German, Italian) and succeeded, on the whole, remarkably well in grouping with them the multitude of minor writers. But, interesting as the exposition is and in many ways valuable, it comes short by omission of all attempt to trace the real origins of that general movement of modern philosophic thought to which Comte contributed little more than a very pertinent name. In the case of particular thinkers, especially German, F. Gruber shows himself well enough aware of the absence of all influence from Comte and presence of other influence (from Kant, &c.); yet the general outcome—or, at least, suggestion—of his inquiry is the more than disputable one, that but for Comte the philosophy of the second half of this century would not have taken on that special relation to empirical fact which the word 'positive' conveys. And the reason of this becomes more and more clear as one reads on: the Jesuit father has all the time a strictly confessional object in view, which is best served by a predominant reference to Comte's personal pretensions. The object is made plain enough long before he asserts and argues in the "Conclusion" (pp. 185-94) that the true Positivism is that which bases upon the three great "facts" of Theism, Christianity, Catholicism. It is revealed in the rather wild denunciation of this or that "freer positivist" which too often takes the place of serious criticism, and takes it the more unfortunately because the Catholic champion can pass a shrewd enough critical judgment when he keeps cool. He loses hold of himself, however, most of all over the Free-mason, between whom and the Positivist he detects a bond as close as it is sinister. But, leaving all that aside, let it be once more said that the work, in general, has great merits. So much, indeed, and so evidently has the author laboured to get command of his subject, that one feels bound to refrain from drawing attention to particular inaccuracies (of a minor sort) which were hardly to be avoided in dealing with so wide a range of thought and thinkers.

Moralphilosophie. Eine wissenschaftliche Darlegung der sittlichen, einschliesslich der rechtlichen Ordnung. Von VICTOR CATHREIN, S.J. Zweiter Band: Besondere Moralphilosophie. Freiburg im Breisgau: Herder'sche Verlagsbuchhandlung, 1891. Pp. xiv., 633.

With this second volume, on Special or Applied Moral Philosophy, the author completes his text-book of Scholastic ethics, of which the General Part was noticed in MIND, xvi. 148. The divisions of the present volume are: Div. I. "The Doctrine of individual Duties and Rights". Bk. i. "Man in his relation to God"; bk. ii. "Man in his relation to himself"; bk. iii. "Of the Personal Relations of men with one another";

bk. iv. "Of the right of Property"; bk. v. "Of Contracts". Div. II. "The Social Relations of Man, or Doctrine of Society". Bk. i. "The Family"; bk. ii. "The doctrine of the State"; bk. iii. "The Law of Nations". It is the author's aim to continue the treatment of ethics as before on grounds regarded as accessible to natural reason apart from supernatural revelation; but more definite reference is now made at each stage to the idea of the Church as a supernaturally ordained society. The volume has a practical aim in relation to questions of the day. In connexion with the theory of property there is a long discussion of Socialism; under the theory of the State the relations between State and Church are discussed; and so forth. Polemic with "modern Liberalism" is of course a conspicuous feature of the discussion of practical questions.

Die Bedeutung der theologischen Vorstellungen für die Ethik. Von Dr. Wilhelm Paszkowski. Berlin: Mayer & Müller, 1891. Pp. vi., 92.

A sketch of the mutual influence of religious and ethical conceptions, first in the "nature-religions" (religions of India, Egypt, Persia, Greece, Rome, &c.) and then in the monotheistic religions (Judaism, Mohammedanism, Christianity), with some general conclusions as to the relation of the two orders of ideas in the present and future. Religion and morals take their origin, the first from "fear of unknown powers," the second from the social feelings. Soon they begin to influence one another; the gods being regarded to a certain extent as protectors of recognised morals and as having themselves an ethical character. This relation of theological conceptions to ethics does not become perfectly established in any of the "nature-religions," but only in the monotheistic religions, and the religious and moral factors only reach their full harmony in Christianity. In *historical* Christianity this harmony has not been reached, Christian theological conceptions having been injurious as well as serviceable to morals. Here as elsewhere religion has been gradually moralised by rational criticism of its dogmas, and the process may be expected to go on till Christianity becomes wholly ethical and at the same time compatible with scientific knowledge.

Theorie der Gesichtswahrnehmung. Untersuchungen zur physiologischen Psychologie und Erkenntnislehre. Von Dr. Engelbert Lorenz Fischer. Mainz: F. Kirchheim, 1891. Pp. xvi., 392.

Two former works by the author were noticed in Mind, ix. 161. His present *Theory of Visual Perception* is on the same lines; that is to say, it is an attempt at a doctrine consistent at once with Catholic philosophical tradition and with modern physiological and psychological science. The book is divided into four sections, treating respectively of four types of theory: i. "Absolute Objectivism or Extreme Realism" (held by some Neo-Scholastics); ii. "The Subjectivism of Modern Physiology" (Helmholtz, &c.); iii. "The Idealism of Modern Philosophy" (Descartes, Locke, Berkeley, Kant, &c.); iv. "Relative Objectivism or Critical Realism" (the author's own view). The first section is very short (pp. 5-24); the fourth, containing the positive doctrine, takes up about half the book (pp. 197-392). The title has been adopted for brevity; the whole, as the author remarks, would be more exactly described as a contribution to the theory of sense-perception generally, with special reference to visual perception. The bearing of the psychological on the philosophical problem is clearly conceived. In the author's view, "whoever solves the problem of perception has solved the problem of knowledge". His own solution of both problems is

contained in the definition of perception as "the immediate psychical apprehension of an object present to consciousness" (p. 237). He adds the qualification that we do not perceive things as they are in themselves, but as they appear according to the conditions under which we apprehend them sensibly at any particular moment (p. 380). Thus, the objects of sight, for example, are "relative" in that their perception depends on a multitude of conditions outside them; but, though "relative," visual perceptions are not "purely subjective".

Geschichte der Philosophie. Von Dr. W. WINDELBAND, Professor an der Universität Strassburg. Dritte Lieferung. Freiburg i. B.: J. C. B. Mohr (Paul Siebeck), 1891. Pp. 257-384.

In briefly noticing the second instalment of this work (see MIND, No. 62, p. 295), it seemed doubtful whether the author could complete his task—from where he left off, in the heart of Mediæval Philosophy—within his originally projected limits; nor has he, in fact, been able to do so. A fourth instalment of "about six sheets" has still to appear before a definitive judgment can be formed on the result of his novel method of treatment by "questions". The most salient feature of the present instalment is the extension given to "Renascence Philosophy"—carried forward, in a "physical-science" (after its "humanistic") period, to cover not only Bacon and Hobbes, but also Descartes and Spinoza, and even Leibniz as substantialist. For the present, Prof. Windelband breaks off in the middle of the "Philosophy of the *Aufklärung*".

Ueber Francis Bacons Formenlehre. Von HANS NATGE, Dr. Phil. Leipzig: B. G. Teubner, 1891. Pp. 82.

A rather elaborate argument for the fundamental position of the doctrine of 'forms' in Bacon's philosophy. Induction, usually regarded as fundamental, derives its whole sense and value from the 'forms'. Form, in Bacon, has a double meaning. It is at once 'essence' or 'concept' and 'law' or 'cause'. Bacon's conception of law and the modern conception are not precisely the same; but the modern character of his thought is seen in this, that for him the configuration and motion of the ultimate particles of bodies constitute the law and also the form of the quality. At the same time it is not to be forgotten that his thought as well as his terminology was modified by surviving Scholasticism.

Ernst Platner als Moralphilosoph und sein Verhältniss zur Kant'schen Ethik. Von PAUL BERGEMANN aus Löwenberg (Schlesien). Halle a. S.: C. A. Kaemmerer & Co., 1891. Pp. 56.

An account of the influence of Kant on the Wolffian, or rather Leibnizian, Platner (1744-1818), especially in ethics. The difference between Platner's earlier ethical views, which are mainly those of the German *Aufklärung*, and his later views formed under Kantian influence, is shown in detail. Even in his later period he did not accept the Kantian formalism, but still upheld "happiness" as giving content to ethical maxims. His criticisms of Kant, as the author shows, were not wanting in point.

Jacob Friedrich Fries als Kritiker der Kantischen Erkenntnistheorie. Eine Antikritik. Von Dr. HERMANN STRASOSKY. Hamburg u. Leipzig: L. Voss, 1891. Pp. 76.

An examination of the modifications made by Fries in Kant's theory of knowledge. While rejecting these—whence the study is called an

"Antikritik" of Fries—the author finds them to be original and stimulating. Remarking on the relation of Fries to Jacobi, he finds that historians of philosophy have taken the wrong view of it in making the philosophy of Fries a combination of positions from Jacobi and Kant. In reality his relation to Jacobi was rather that of a master than of a pupil.

Principien der Ethik und Religionsphilosophie Lotzes. Von G. Vorbrodt. Ein Gedenkblatt zum 1. Juli 1891, dem zehnjährigen Todestage Lotzes. Dessau u. Leipzig: Rich. Kahle, 1891. Pp. vii., 186.

An attempt to put into systematic shape the ethical and religious philosophy which Lotze did not live to expound in his definitive "System of Philosophy". The divisions of the book are: i. "Ground-questions of theory of knowledge and psychology" (pp. 1-39); ii. "Exposition of Lotze's ethics" (pp. 39-93); iii. "Exposition of Lotze's religious philosophy" (pp. 93-169); with some "Concluding remarks" (pp. 170-183), and a short "Bibliographical Appendix" (pp. 184-6).

Ueber Aufgaben u. Methoden der Psychologie. Von Hugo Münsterberg. Leipzig: A. Abel, 1891. Pp. 182.

This essay has been primarily issued as pt. ii. (pp. 93-272) of the new series of *Schriften der Gesellschaft für psychologische Forschung*, mentioned in Mind, No. 63, p. 442. It is of like notable quality with the author's *Beiträge*. Space has been readily accorded above (pp. 521-34) to a hostile critic of Dr. Münsterberg's psychological work; and, so far as errors or deficiences are made out in it, nothing but gratitude is due from all concerned for the pains so strenuously taken. The writer of these lines, who took on himself the responsibility of signalising the importance and freshness of the *Beiträge*, cannot, however, say that his own first opinion of them is seriously affected by Mr. Titchener's criticism—much as there may be in this which Dr. Münsterberg would do well to ponder. The present essay subordinates the question of the Methods to the question of the Problems in a novel and very suggestive way. It is impossible here and now to give even a general indication of the methodological scheme which the author is thus led to frame, but nobody whose business is with psychological science at its present stage of advance can afford to overlook the scheme or its setting.

Nog Eens: Oorsprong en Grenzen der Kennis. Inwijdingsrede uitgesproken op 6 October, 1890, bij de Aanvaarding van het Hoogleerarsambt aan de Rijksuniversiteit te Utrecht, door Jhr. Dr. B. H. C. K. Van der Wijck. [*Once More: Origin and Limits of Knowledge.* Inaugural Lecture delivered 6th October, 1890, on entering upon the office of Professor in the National University of Utrecht by Chevalier Dr. B. H. C. K. Van der Wijck.] Utrecht, 1890.

When Prof. Opzoomer, the most eminent contemporary philosopher of Holland, was compelled by failing health to retire from the active duties of his chair at Utrecht, it was universally recognised as right and fitting that Prof. Van der Wijck of Groningen, his most faithful and distinguished disciple and follower, should be his successor in the professorship which he had so long adorned. Prof. Van der Wijck's Inaugural Lecture is of itself an adequate justification of his appointment and clear evidence that the great tradition of the chair will be well sustained by its new occupant. But it is also a valuable contribution to the discussion of the fundamental philosophical problem of our time, and it deserves on that account to be studied for its own sake. In

clear, direct and vivid language the new Utrecht professor discusses again the question of the *Origin and Limits of Knowledge*, which had formed the subject of his inaugural lecture when entering upon his public career as professor of philosophy at Groningen, a quarter of a century ago. That period of continued study and active teaching has somewhat modified his acceptance of the external empiricism of Opzoomer's original position from which he started ; and the interest of the new inaugural lecture lies mainly in the candour and precision with which a maturer and deeper view is stated in it. The general validity of the theory of the empirical origin and limitation of knowledge is indeed affirmed anew, and its triumph over mere "idle ideal speculation" is emphasised ; but it is admitted at the same time that the principle of experience has been advocated in too external and one-sided a way, and that it is necessary so far to adopt the principle of the idealist in order to give an adequate explanation of the origin and nature of human knowledge. In the progress of philosophy the idealists and the empiricists, formerly at opposite poles, have in fact now come nearer each other. "The conflict between experience and speculation is settled in principle. On the one side, it is now recognised that our thinking must have the solid ground of facts under it ; and, on the other side, it is now recognised that the power of thinking goes continually beyond experience." While empty ideal speculation is to be abandoned, the scientific thinker has at the same time to acknowledge and appreciate the element of knowledge contributed by the mind itself through its own percipient and intellectual activity. This is the *form* of knowledge, an element which cannot be derived from mere mechanical presentations, or external motions, or material atoms. This formative element includes space and time, the principles of connexion, continuity and unity (Kant's foundations of Pure Physics), objective reflexes of the activity and unity of consciousness. Mental Philosophy has really supplied these fundamental conceptions to Physical Science ; and it has been by their aid, and not by mere simple inductions, that the great laws of the indestructibility of matter and force, and of their conservation, have been discovered. But these formal elements of knowledge are merely relative ; they only arise out of, and in connexion with the opposition of subject and object ; and they only explain the order of the universe in terms of human thought. The origin of human knowledge is thus fully explained, and at the same time its limits are determined. By the aid of such conceptions, and of hypotheses in harmony with them, the range of human knowledge of this kind may be indefinitely enlarged, but its inherent conditions cannot be violated or transcended. There can be no knowledge of an absolutely objective mechanical world of matter or atoms ; and it is idle to attempt to explain our subjective experience by mere material atoms and changes. The reality of objective being is a necessity of thought, but we can only construe its nature and relations from our own subjective standpoint. "As we know things only through our consciousness, we know them also only in relation to our consciousness. Our knowledge is so far limited." The significance of all this is obvious. The author himself points out the connexion of his views with those of Kant, Lotze, Fechner, Bain, and Wundt. The Lecture closes with graceful and appropriate references to the relations and circumstances under which it was delivered. It was worthy of its occasion. [W. H.]

Arnoldi Geulincx Antwerpensis *Opera Philosophica*. Recognovit J. P. N. Land. Volumen primum. Hagae Comitum apud Martinum Nijhoff, MDCCCXCI. Pp. xx., 506.

This first volume of the collected edition of Geulincx's philosophical

works, announced in Prof. Land's article in MIND, No. 62, contains rather less than was then promised (cp. p. 241); but, between the *Quaestiones quodlibeticae* with the first and second academic *Orationes* on the one hand and the *Logica restituta* with (previously unpublished) supplementary *Dictata* on the other, gives yet a very characteristic representation of the mental quality and range of the ill-fated thinker. It is in the second volume, to follow a year hence, if this can cover (besides what still remains to be given of logical import) the *Ethica* as well as the *Metaphysica*, that his true measure as a philosopher will admit of being taken and his relations both to later and to earlier thought may be rightly appreciated. Already, however, in the first volume, he is seen to put a serious meaning of his own into the forms of the traditional Logic; while the lighter pieces, of which Prof. Land's article gave interesting account, show him possessed, with strenuous intellectual purpose, of a brightness of humour which, one would hope, may have helped him the better to bear the reverses of an all too unfortunate life. In editing the works now given, Prof. Land has spared no pains of collation, so as to make the long-delayed act of reparation the more complete, and also to make the interior worthy of the fine external setting (after the precise model of the memorial edition of Spinoza's *Opp.*) to which he has been helped with the balance of the Spinoza fund. The biographical data, which he has been able after Vander Haeghen (see MIND, xiii. 298) to ascertain with probably as much completeness as, in the circumstances of Geulincx's life and end, is now possible, are clearly set out at the beginning; but in place of a portrait (which can never have been taken) we have to be content with three facsimiles of the philosopher's signature. [Occasion may here be taken to correct a mistranslation on p. 240 of Prof. Land's article in No. 62. From line 10, the sentence should run: "They embrace the *Annotata praecurrentia* and *majora* to Descartes' *Principia*, with a collection of theses defended under Geulincx's presidency (1690-1),"—the date, so given, being that of publication. The figures "in 1690-1," as they stood, give a false suggestion.]

RECEIVED also:—

D. Hack Tuke, *Pritchard and Symonds, with Chapters on Moral Insanity*, Lond., J. & A. Churchill, pp. iv., 116.

J. M. Sterrett, *Studies in Hegel's Philosophy of Religion*, Lond., Swan Sonnenschein, pp. xiii., 348.

J. Rae, *Contemporary Socialism*, 2nd ed., Lond., Swan Sonnenschein, pp. xii., 508.

F. H. Collins, *The Diminution of the Jaw in the Civilised Races, an Effect of Disuse*, Lond., Williams & Norgate, pp. 16.

E. C. Brewer, *Constance Naden and Hylo-Idealism*, Lond., Bickers, pp. 24.

W. M. Salter, *What can Ethics do for us?* Chicago, C. H. Kerr, pp. 32.

P. van Bemmelen, *Le Nihilisme scientifique*, Leide, E. J. Brill, pp. 32.

F. Hillebrand, *Die neuen Theorien der kategorischen Schlüsse*, Wien, A. Holder, pp. vi., 102.

J. G. Vogt, *Das Empfindungsprinzip u. das Protoplasma auf Grund eines einheitlichen Substanzbegriffes*, Leipzig, E. Wiest, pp. 208.

W. Molsdorf, *Die Idee des Schönen in der Weltgestaltung bei Thomas von Aquino*, Leipzig, G. Fock, pp. 47.

M. Berendt, J. Friedländer, *Spinoza's Erkenntnisslehre in ihrer Beziehung zur modernen Wissenschaft u. Philosophie*, Berlin, Mayer u. Müller, pp. xx., 315.

A. L. Kym, *Ueber die menschliche Seele, &c.*, Berlin: K. Brachvogel, pp. 46.

VII.—FOREIGN PERIODICALS; NOTES.

Revue Philosophique.—An. xvi., No. 7. G. Milhaud—La notion de limite en mathématiques. [A "philosophical dialogue," in which the difficulties of one interlocutor are met by a clear statement of the position that everything follows strictly from the notion of limit as defined; the pure mathematician not being concerned with questions as to the correspondence of his results with any given reality.] F. Lannes—Coup d'œil sur l'histoire de la philosophie en Russie (i.). P. Regnaud—Les sources de la philosophie de l'Inde. [The religious conception of the Vedic epoch was that of a *circulus* without end, a perpetual exchange of the elements of life. This found its expression in the sacrifice, regarded as itself an essential part of the universal process. Heaven, with the cosmical or mythical beings which it contains, restores to earth under the form of rain the libation it has received from man by means of the sacrifice. After a time the allegorical sense of the sacrificial hymns remained the only sense that was understood, and a mythology sprang from it which transformed the Vedic religion. The genuine sense beneath the allegory, the idea of an indefinite *circulus* of universal life, lost as essence of the religion, was preserved and prolonged by philosophy.] Analyses, &c. No. 8. G. Mouret—L'égalité mathématique (i.). [An attempt to show, with special reference to the relation of equality, that "the data of mathematics are certain fundamental laws of the mechanical and physical sciences".] L. Arréat—L'hérédité chez les peintres. [Finds in two-thirds out of about 300 cases evidence of "hereditary preparation," and suspects that with further information about the remaining third more would be found.] A. Espinas—La technologie artificialiste (i.). [On the instruments of industry and technical processes in use among the Greeks from the seventh to the fifth century B.C.] A. Bertrand—Un précurseur de l'hypnotisme. [Dr. Pététin of Lyons, whose first memoir was published in 1787; a more extensive (posthumous) work in 1808. A very interesting account is given of his observations and how they came to be made.] Notices bibliog. No. 9. A. Fouillée—Le problème psychologique. [Psychology should not be treated simply from the point of view of intelligence. Primitively mental phenomena are not *representations*, but *appetitions* accompanied by pleasure or pain, consequently *actions* and *reactions*. An argument follows for the explanation by "immanent finality" both in psychology and biology as more profound than mechanical explanations. Against Prof. W. James, M. Fouillée again contends for a feeling of activity of centrifugal origin; and, against others, for a direct appreciation of the intensity of mental states.] A. Espinas—La technologie artificialiste (fin). [The art chiefly discussed is that of medicine as practised by Hippocrates. It is shown to have been an art based on science, and in particular on the naturalistic philosophies of the time.] G. Mouret—L'égalité mathématique (fin). [Further considerations on the conditions of forming an axiom of mathematical equality from observed relations.] Analyses, &c. Notices bibliog. Rev. des Périod.

Rivista Italiana di Filosofia.—An. vi. 2, No. 1. F. Cicchitti-Suriani—La scienza dell'educazione nelle Scuole e nelle Riviste italiane. S. Ferrari—La filosofia di Empedocle. A. Chiappelli—Scienze filosofiche e sociali: Relazione sul concorso ai premii ministeriali. L. Ferri—Alcune considerazioni sull'Eclettismo. Bibliografia, &c.

PHILOSOPHISCHE MONATSHEFTE.—Bd. xxvii., Heft 5, 6. J. Volkelt—Wilhelm Wundt's "System der Philosophie" (i.). K. Ipsen—Die dänische Philosophie des letzten Jahrzehnts. Recensionen, &c. Heft 7, 8. G. Schneege—Goethes Verhältniss zu Spinoza und seine philosophische Weltanschauung (i.). [Goethe's Spinozism was modified by the Leibnizian conceptions of force and independent individuality. His own philosophical view may be called a "dynamical pantheism," involving as it does an "immanent teleology".] J. Volkelt—Wilhelm Wundt's "System der Philosophie" (ii.). Recensionen, &c.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE.—Bd. xv. Heft 3. H. Höffding—Psychische u. physische Activität. [A striking defence of the Identity-hypothesis of mind and body in opposition to the objections urged against it, under the name of 'Duplicism,' by the author's colleague, Prof. Kroman, in *Kurzgefasste Logik u. Psychologie* (see MIND, xv. 579).] A. Marty—Ueber Sprachreflex, Nativismus u. Absichtliche Sprachbildung (viii.). C. v. Ehrenfels—Zur Philosophie der Mathematik. H. Schmidkunz—Berichtigung. E. G. Husserl—Die Folgerungscalcul u. die Inhaltslogik. Anzeige, &c.

PHILOSOPHISCHE STUDIEN.—Bd. vii., Heft 2. A. Lehmann—Kritische u. experimentelle Studien über das Wiedererkennen. [Continuation of the author's essay on Recognition in *Phil. Stud.* v. 96, determined both in its experimental and its critical aspect by Höffding's elaborate rejoinder (in *Viert. f. wiss. Phil.*) to the original essay. The author claims now to have definitively established his former position—that a contiguity-association presupposes neither a similarity-association nor an immediate recognition.] E. W. Scripture—Zur Definition einer Vorstellung. [A well-argued plea for making intellectual unification the specific attribute of *Vorstellung* in all circumstances. The author remarks on the disadvantages of the English 'Presentation' (because of 'Representation') and 'Idea'. Is it past hoping for that 'Notion,' which has lost or never acquired any definite psychological use, might yet become fixed in English as the exact equivalent of *Vorstellung* in all its legitimate applications?] W. Wundt—Zur Frage des Bewusstseinsumfanges. [Defends, against F. Schumann, the consistency of his procedure in *Phil. Stud.* vi. 250 with the doctrine of his *Phys. Psych.*] H. Higier—Experimentelle Prüfung der psychophysischen Methoden im Bereiche des Raumsinnes der Netzhaut. W. Wundt—Eine Replik C. Stumpf's.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE.—Bd. iv., Heft 4. P. Tannery—Neuf lettres inédites de Descartes à Mersenne. [Concerned chiefly with mathematical and physical topics. In more than one of them the rising opposition of the Jesuits to the Cartesian philosophy is referred to. There is also interesting mention of the phenomenon of hypnotism in animals.] E. Thomas—Ueber Bruchstücke griechischer Philosophie bei dem Philosophen L. Annaeus Seneca. C. Baeumker—Eine bisher unbekannte mittelalterliche lateinische Uebersetzung der Πυρρώνειοι ὑποτυπώσεις des Sextus Empiricus. J. Freudenthal—Beiträge zur Geschichte der englischen Philosophie. [Continues the study of Everard Digby.] W. Dilthey—Auffassung und Analyse des Menschen im 15. und 16. Jahrhundert. [After general survey, discusses Machiavelli and Montaigne as illustrations of the new types of thought and character produced by revived classical studies.] H. Diels—Neue Fragmente des Xenophanes und Hippon. Jahresbericht (L. Stein, P. Wendland, W. Dilthey, A. Döring, J. Schmidt, B. Erdmann). Neueste Erscheinungen.

Zeitschrift für Psychologie u. Physiologie der Sinnesorgane.—Bd. ii., Heft 5. C. Lombroso, S. Ottolenghi—Die Sinne der Verbrecher. [A careful inquiry conducted upon a large number of criminals, "born" as well as occasional, in comparison with normal individuals,—with result that criminals manifest, in general, a deficient sensibility of all kinds except sharpness of vision; one among many points of special interest being the abnormally low development of smell even in sexual criminals. The results are interpreted in the light of, and appear so far to bear out, Lombroso's well-known theory of congenital criminality; they strengthen also the view that moral (as well as intellectual) efficiency has relation to sense-endowment.] G. Engel—Uber Vergleichungen von Tondistanzen. [Weighty contribution, by a professional musician, to the discussion of the question so hotly disputed by Profs. Stumpf and Wundt over the body of the latter's pupil Lorenz. So far as Prof. Engel takes a side, it is with Stumpf, but he raises also new and important points of his own.]

The Aristotelian Society for the Systematic Study of Philosophy (22 Albemarle Street, W.). At the last meeting of the Twelfth Session, held June 8, a paper was read by Mr. Arthur Boutwood, on "The Philosophy of Rosmini," which was followed by a discussion. The following were elected as members of the Executive Committee for the ensuing session: *President*, Mr. Shadworth H. Hodgson; *Vice-Presidents*, Mr. S. Alexander, Prof. A. Bain, and Mr. G. F. Stout; *Editor*, Mr. Bernard Bosanquet; *Hon. Secretary and Treasurer*, Mr. H. Wildon Carr. The first meeting of next Session was appointed for Monday, Nov. 2, at 8 p.m., when the President will deliver the annual Address. The subject selected is "Matter."

At a Centre for the Extension of University Teaching established for the last four years in Essex Hall, Strand, lectures on Philosophy and Practical Economics have been listened to with keen interest by hard-working students, while popular lectures have proved a failure. As the members of the London Ethical Society desire to establish more systematic teaching in the subjects dealt with at their Sunday evening lectures, they have taken over the management of the Extension-work. The Committee (including, among others, Mr. J. Bonar, Mr. B. Bosanquet, Prof. J. E. Carpenter, and Mr. J. H. Muirhead) has drawn up a scheme of study extending over several years. This commences in October, when Mrs. Bryant, D.Sc. (Lond.), will give a course of lectures on "Mind and Life," and Mr. W. A. Flux, M.A. (Camb.), a course on "First Principles of Political Economy". These courses are intended to be introductory to the more direct treatment of Ethics and Political Philosophy, Philosophy of Art, and History and Philosophy of Religion. The Society hopes also to institute classes on the Theory of Education, the Duties of Citizenship, &c.

Mr. Edmund Sydney Williams (publishing as 'Williams & Norgate') died on 1st September, in his 75th year: truly mourned by one who has had the unfailing benefit of his help and advice in the conduct of Mind.

Special Notice.—*MSS. and all other communications for the Editor should now be addressed to* Mr. G. F. Stout, St. John's College, Cambridge.

VALEDICTORY.

Sixteen years ago some words of preface were written on occasion of the first attempt to produce in this country a Philosophical Review, and the time has now come for a few words of conclusion from the same hand. Not that MIND *is ending; for (as stated in the July No.) a Second Series of the Review will be begun next quarter, under a co-operative direction that promises a far more effective covering of the ground of Psychology and Philosophy than has hitherto been attained. But the original effort is spent.*

That effort, as some know already, has been rendered possible by the public spirit of one man. Why should it not now be openly told, that but for Professor Bain's generous initiative in 1876 this country might still be without a philosophical organ? Let the fact be borne in mind the next time it occurs to anyone to remark on the limitations of homebred English thinking. An English psychologist of the traditional stamp was the first to project, and single-handed has ever been there to sustain, a Review open to all the serious philosophical thought of the country and seeking new lights from the whole world around.

Warm thanks are offered to those who have stood by MIND *from the first or later and made its reputation. There is no need to specify here the names that have recurred most frequently in its pages. One exception, however, should be made. Without the help of Mr. Thomas Whittaker, it would not have been possible to furnish the comprehensive survey of each quarter's new literature that has*

distinguished the Review in its later years. For his (major) share, since 1885, in the anonymous work so done under the heading of 'New Books,' as well as for the qualities he has displayed in signed 'Critical Notices' of works, especially foreign ones, which but for him might never have had their importance made known among us, no editorial acknowledgment is too strong.

The Editor, for his part, is mainly conscious of shortcoming. Its full extent he can himself best measure, knowing all that he had hoped to make of the Review; but any reader may have noted, with the years, a gathering tale of promises unfulfilled. For such default, and for the greater that does not in the same way appear, he can but plead the excuse of a struggle with ill-health through most of the sixteen years. In the circumstances, it is perhaps something that MIND *has never once failed to appear at the appointed time. And as to promises, one at least, given from the beginning, has been amply made good. Though some have been slow to recognise what they did not expect to see, nobody that has followed the course of the Review with any attention can now be left unconvinced that* MIND *has all through stood impartially open to writers of every school. If, now and again, frequenters of "the high priori road" have been less vocal in its pages, it is only because they have not chosen to make use of the opportunity of utterance here afforded. The one thing required of writers, with anything of interest or importance to say, has been a knowledge (more or less) of previous thought on their subject. The test, some may think, has not always been very rigidly applied. It has never been applied unequally.*

MIND *began to appear simultaneously with the 'Revue Philosophique,' which has ever since been conducted with so much vigour and intelligence by M. Th. Ribot. On neither side was the project of the other known beforehand. There was thus a real significance in the fact that French and English workers were at the same time moved to institute, each, a serial organ for recording the advance of psychological science and for giving expression to the philosophical thought of the day. Till then the work of philosophical journalism had been left mainly to Germany. The English and French Reviews came late into the field, but have had an effect without as well as within their respective countries. Very notable is the change that since 1876 has been wrought in Germany.*

The older Reviews have given increasing attention to Psychology, and several new serials have come into being, not unstimulated (one may, perhaps, suppose) by the example of MIND *and its French contemporary. Only less marked is the advance made in Italy upon the old journalistic activity of Mamiani; while in America (where 'The Journal of Speculative Philosophy' has all the time gone on appearing in its peculiar fashion) two or three new Reviews bear witness to great and growing concern in all that pertains to mental science.*

Whatever be the part that MIND *may have had in promoting that result, the activity of mental research in other countries is now such that it would have been nothing short of a national reproach if at this time the English Review had been suffered to come to an end. It should thus be matter of congratulation on all sides that there has been found no want of hands ready to keep the flag flying. What conjecture, then, may be hazarded as to the Second Series of* MIND *from the original Series now ending? It is safe to predict that in all departments of properly philosophical thought the Review will show no falling away from the active interest—not less genuine because mainly practical—that has continued to mark the countrymen of Locke and Berkeley and Hume. Nor is the traditional English work of subjective psychological construction likely to be less effectively represented in its pages than heretofore. But will they prove that this country is at last going to take its fair share in the experimental work which, for the present at least, is the most promising of all the lines of psychological advance? The later volumes of* MIND, *since the time (1883) when a similar note of interrogation was made, have included a good proportion of experimental research; but it can hardly have escaped attention that it has been contributed mostly from without, by American hands—the same hands that have been or are now organising psychological laboratories over all the breadth of their own land. The interrogatory note is, therefore, still in place. Fortunately, some promise of affirmative answer to it has just come into view. A grant of fifty pounds, by the University of Cambridge, for psychophysical apparatus, with the use of a separate room in the new physiological laboratory there, will not go very far but yet it is a beginning: and the start is made at Cambridge where it not only was first to be looked for but has the best*

prospect of being followed up to good purpose. Elsewhere, north or south, academic circumstances are not, for the moment, favourable to the development of the new line of psychological investigation. But, as it is by no accident that Cambridge hands and heads are henceforth to be chiefly responsible for the conduct of MIND, *there is every reason to expect that the Review will now do much to help on the beginning at last made of provision for a mode of scientific inquiry too long neglected among us.*

In another way, also, the coming Series of MIND *may easily surpass its forerunner. The retiring Editor has had no greater disappointment, throughout the past sixteen years, than in his failure to attach to the service of the Review more than a few of those in this country whose regular business is with Philosophy. To these few his gratitude has already been expressed, including as they do several eminent thinkers whose philosophical activity is not less professional for not being professorial. But the avowed 'professors' are now there in no small number, south as well as north of the Border and in the sister island; and one very marked feature of* MIND *hitherto is the degree to which they have been content to leave the task of filling its pages to the industry or ambition of the lay student. Now in Philosophy there is always room and there should be encouragement for good lay work; but just in Philosophy—where, because of its supreme human interest, anybody may claim to have a voice—is there most need for the critical and directive help of "those who know". The Review must draw to it a larger quantity of expert-work before it can truly become what it has been abroad too readily assumed to be—the faithful and complete representative of all that is best in English thought. It rests now with the body of philosophical instructors to make it such, by a more active interchange, in its pages, of opinion on the subjects occupying their minds from year's end to year's end,—an interchange that would be only the more effective if made as direct and curt and informal as possible. No better wish can be expressed for the next Editor than that he may succeed in commanding a more general and steady support of this kind from his professional brethren than has been the fortune of his predecessor.*

GEORGE CROOM ROBERTSON.

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